Kilowatts or Kilotons
Turkey and Iran's nuclear choices

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Abstract

Scholars have been working on the proliferation question since the detonation of first the atomic bombs in 1945. Yet despite over six decades of fears about the rapid spread of nuclear weapons, only ten states now posses the bomb; and of these only Israel, India, Pakistan, and North Korea developed their weapons after the Treaty for the Nonproliferation of Nuclear Weapons opened for signature in 1968.

Nevertheless, numerous states have clandestinely pursued nuclear weapons despite their treaty obligations and the robustness of the nonproliferation norm. What factors prompt some leaders to pursue nuclear weapons, while the vast majority of others choose to rely on the nonproliferation regime, external guarantees, or a combination of the two, for security? To answer this question this study compares nuclear decision-making in one state that chose to proliferate - Iran - and a state that did not - Turkey - from the mid-1950s, when they first showed interest in nuclear energy, to the present. To maximize the total number of observations, the study analyzes every nuclear decision made during this period in an attempt to identify the subjective variables influencing decision-makers in both countries.

It will be further argued that nuclear decision-making is multi-causal, owing to different conceptions of similar external inputs. As such, nuclear decision-making is country specific, requiring in-depth research to determine the dynamics of proliferation in different countries to determine the reasons why individual states choose to proliferate, compared to the majority that have embraced nonproliferation.

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Introduction: The World's Most Powerful Weapon

In August 1945, the United States' military dropped two atomic bombs on the Japanese cities of Hiroshima and Nagasaki. The weapons' power changed the way military strategists conceived of war. Bernard Brodie, the American architect of deterrence theory, reasoned that in the atomic era, nations must remain forever prepared for war or otherwise risk tempting a nuclear-armed adversary to launch a preventative attack. For Brodie, the destructive power of nuclear weapons rendered traditional defense obsolete, and thus required the maintenance of a credible capability to strike an enemy's cities.

Brodie's mentor, Jacob Viner, coined the term deterrence in November 1945, telling the audience that a well prepared and nuclear armed adversary could retain the capacity to respond to any first strike by enemy. As such, both sides could be deterred from launching a first strike, so long as the adversary retained the capability to strike back. This fundamental assumption has underpinned nuclear strategy ever since. The notion of deterrence has also influenced the study of nonproliferation and the assumptions made about why states seek out nuclear weapons. If an adversary acquires a weapon with the destructive power of an atomic bomb, then the rival state must seek out an effective defense.

As Brodie articulated in his seminal work on the topic, *The Absolute Weapon,* deterrence was the only rational policy in the nuclear weapons era.[1] Thus, if a rival state is suspected of pursuing, or has acquired a nuclear weapon, it is rational for a state to seek out atomic arms to ensure state survival. This pessimistic assumption about the

[1] Bernard Brodie (ed.) *The Absolute Weapon: Atomic Power and World Order* (New Haven: Yale University Press, 1946).

dynamics of proliferation, in turn, has resulted in the prevalence of realist/neo-realist arguments about proliferation decision-making. In an anarchic world where power begets power, states have an interest in obtaining history's most destructive weapon. And, if one state acquires this weapon, a rival state will take steps to also acquire nuclear weapons.

Balanced against this pessimistic assumption are other explanations for nuclear decision-making. Like Brodie in 1945, many of the American scientists responsible for the development of nuclear weapons argued that the physics needed to develop nuclear weapons were widely known; and thus proliferation was inevitable. Thus, to prevent future catastrophe, the United States must disarm, in favor of a global regime responsible for overseeing nuclear research. This proposal was never fully implemented, although many of its component parts were used first in the United States' Atoms for Peace initiative, and then the supranational International Atomic Energy Agency. Thus, to explain why states forego nuclear weapons, some scholars point to the weapon's indiscriminate lethality. This lethality, in turn, has resulted in a prohibitive norm against the weapons' use.

Indeed, despite the prevalence of the security centric explanations about nuclear decision-making, few states have developed nuclear weapons. This slow pace of proliferation has prompted scholars to examine the dynamics of proliferation to determine: Why do certain states proliferate, whereas most choose to forego nuclear weapons? To date, scholars have yet to settle on a definition of these dynamics, owing to continued disagreement about the reasons for nuclear decision-making. To address this lacuna in the nonproliferation scholarship, this study examines nuclear decision-making in two similar states, Iran and Turkey.

Both countries are heirs to historic empires, sit at the periphery of the Middle East, were close allies of the United States for much of the Cold War, and have expressed a prolonged interest in nuclear energy. Furthermore, both countries had an antagonistic relationship with the Soviet Union and, by extension, were wary of the spread of Soviet-allied pan-Arab nationalist states along their borders. As such, one should expect Turkey and Iran to have viewed nuclear weapons similarly, owing to their shared threat perceptions. Furthermore, when the first normative mechanisms against proliferation were drafted, neither Iran nor Turkey had nuclear weapons, both faced key technical constraints that hindered independent nuclear weapons/energy development, and were reliant upon foreign actors for nuclear expertise. For these reasons, one should also have expected a similar reaction to supranational effort to control nuclear technology.

Further to this, after the 1979 Islamic Revolution, Iran's relationship with the United States changed. After this change in government, the Iranian leadership made the decision to proliferate. This key data-point allows for the study of a so-called "deviant case," as compared to the more typical decision-making processes in Turkey (1954-present) and pre-1979 Iran. According to Alexander L. George and Andrew Bennett, the selection of a so-called deviant case study that breaks from traditional nonproliferation explanations (either through restraint when exposed to so-called "triggers" or foregoing restraint in favor or proliferation during an era of wide acceptance of nonproliferation norms) "may provide significant theoretical insights" for scholars.[2]

As James Walsh notes in *Bombs Unbuilt: Power, Ideas and Institutions in International Politics,* nonproliferation scholarship has traditionally suffered from the

[2] Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in Social Sciences* (Cambridge: Harvard University Press, 2004), pp. 6-7.

"dependent variable problem." Most case studies, Walsh notes, focus on the behavior of nuclear weapons states, which has therefore resulted in case study selection bias; leading to flawed conclusions about the dynamics of proliferation.[3] Thus, by comparing two states that made *different* nuclear decisions, this study seeks to overcome the traditional selection bias in nonproliferation scholarship to help answer: why some states choose to proliferate, whereas others do not. To do so, this study focuses on the following question: Do similar states respond similarly to the same external inputs?

By selecting these two cases, this study intends to address the inherent selection bias Walsh outlined because these two non-nuclear weapons states have rich nuclear histories that lend itself to the process tracing method. As such, this study's dependent variable is: Iran and Turkey's nuclear decisions. The two countries' similarities vis-à-vis security concerns and nonproliferation norms, in turn, serve as this study's independent variables. For the purposes of this study, these independent variables are defined as "external inputs," and include: security, norms, and the influence of key-decision makers.

This study's research design is discussed in detail in Chapter 2 (which also included this study's literature review). Briefly, to maximize the number of observations, this study uses case study analysis and the process tracing method. By maximizing the number of nuclear decisions observed, this study intends to test dominant nonproliferation theories (described in this study's literature review) to understand the dynamics of nuclear decision-making in Iran and Turkey. In doing so, this study adds to knowledge in two ways: First, it generates new hypotheses about reasons for nuclear decision-making in Iran and Turkey. Second, and relatedly, these observations are then

[3] James Walsh, "Bombs Unbuilt: Power, Ideas and Institutions in International Politics," (PhD diss., Massachusetts Institute of Technology, 2001), pp. 7-8.

used to draw conclusions about the best way to make predictive models about nuclear decision-making in different countries.

To discern and then compare these two countries' nuclear choices, this study compares a total of 142 nuclear related decisions (65 Turkish, compared to 77 Iranian nuclear decisions).[4] In doing so, this study's aim is twofold: First, to measure whether Iran and Turkey made similar decisions when exposed to a similar input. Second, to test the dominant theories for nuclear proliferation/restraint, as described in this study's literature review (Chapter 2).

The bulk of this study relies upon Western primary sources to document Iran and Turkey's nuclear histories. To account for source bias, this study uses primary Turkish and Iranian sources wherever possible. However, neither Iran nor Turkey has historical documents detailing the country's nuclear history – and nuclear decisions. As such, for much of the historical narrative, this study relied upon American archival records, which document the negotiations for civil nuclear energy cooperation and nuclear weapons defense planning. This method raises some obvious problems, owing to lack of officials Turkish and Iranian sources. To overcome this problem, this study used Turkish and Iranian secondary sources (newspaper articles) to supplement the western documentation. Furthermore, wherever possible, current and government officials were interviewed to provide a more complete picture of Turkish and Iranian nuclear decision-making.

With regards to Iran's post-1979 nuclear program, much of this study's conclusions about nuclear weapons intent are based on International Atomic Energy Agency reports. Iran provided much of the information in these reports, but has

[4] These observations are recounted in two charts in the findings section under the sub-heading aggregate data.

vehemently denied allegations contained in numerous different reports of a nuclear weapons program. The IAEA, in contrast, has deemed the allegations credible, owing to its own investigative work and information supplied to it by numerous different member states. For the purposes of this study, the IAEA data about the weapons program was deemed credible, and is thus used to draw conclusions about Iran's nuclear weapons intent.

To test this study's hypothesis - similar inputs should result in similar nuclear decisions – this study identified a set of common inputs (described in great detail in the methodology section). These inputs were placed in one of three broad categories: security, norms, and key-Individuals. To make a determinative judgment about the reasons for specific nuclear decisions, this study then identified a set of common inputs that resulted in a nuclear decision. By measuring how these inputs affected nuclear decision-making, this study sought to discern the reasons for Turkish and Iranian nuclear decision-making – and indeed identify the dynamics of proliferation to determine if they were similar.

In doing so, this study addresses a key lacuna in nonproliferation scholarship: the reasons for divergent nuclear decision-making. Ultimately, this study finds that dynamics of proliferation decision-making are different in Iran and Turkey; and thus this study's hypothesis is null: Similar inputs *do not* result in similar nuclear decisions. As such, one broader conclusion is that decision-making/policy-making are unique to different individuals. Thus while states may adopt similar policies – adherence to the Treaty on Nonproliferation of Nuclear Weapons, for example – the reasons for the decision may be different. The overarching lesson, therefore, is that decision-making is highly

individualistic. Nonproliferation scholarship must therefore account for the role of these key individuals when making determinative judgments about why certain states proliferate.

The introduction and chapter two describe this study's methodology and the current nonproliferation scholarship about the reasons for nuclear decision-making. This study's three analytical chapters are organized around the three specific categories: security, norms, and key-Individuals. Each chapter contains a set of common inputs; from which the process tracing method is used to discern: 1) How each state responded to similar inputs; 2) And to answer: were the responses different/similar. This direct comparison then allows for the identification of the dynamics underpinning each country's nuclear decisions, which therefore allows for a more rigorous comparison of the decision-making dynamics in each country. This comparison takes place in three analytical chapters organized around a set of common inputs; from which Turkey and Iran's subsequent nuclear decisions are documented. The chapters directly compare how Turkey and Iran made policy in reaction this study's independent variables.

Chapter 3 describes how Turkish and Iranian leaders reacted to similar security related inputs. These inputs include: The Soviet threat during the Cold War; Turkish and Iranian doubts about the American security guarantee; the threat of regional proliferation; and the end of the Cold War and the bipolar global order. This study found that Turkey and Iran had different conceptions regional security issues and thus the leadership differed in how they conceived of nuclear weapons. For Ankara, nuclear weapons were thought of as vital for defending Turkish territory against a possible Soviet invasion. Iran, in contrast, turned down an American offer to rely on nuclear weapons for defense from

the Soviet Union, and instead opted for a conventional defense policy premised on détente with the Soviet Union and rivalry with Arab nationalism. However, after 1979, the two countries reacted differently to the threat of regional proliferation. Iran, for example, eventually chose to proliferate to defend against the Iraqi chemical weapons threat, whereas Turkey has gradually decreased the role of nuclear weapons for its defense, in favor of conventional defense. In total, this chapter suggests that security related inputs are not the cause of Turkish and Iranian nuclear decision-making.

Chapter 4 documents how Turkey and Iran have approached nuclear nonproliferation norms to determine how they have affected nuclear decision-making. This study identified a common set of nuclear restraints:

Nuclear Restraints
1- Treaties/Nonproliferation Agreements
2- Trade/Internationalizing Political Model
3- Humanitarian/International Acceptance

The data indicates that Turkey and Iran first became interested in nuclear energy after the United States offered to subsidize and assist with the development of small research programs. However, after negotiations finished for the Treaty on the Nonproliferation of Nuclear Weapons (NPT), Turkey and Iran adopted different nonproliferation policies. The Iranian leadership chose to sign and ratify the NPT, whereas Ankara resisted signing for more than a decade. Ankara eventually changed policy, after it became necessary to sign the Treaty to allow for the export of a nuclear reactor in the late 1970s.

Turkey has since relied upon the nonproliferation regime to prevent the spread of weapons of mass destruction. Iran, in contrast, has steadily moved away from the regime; concluding in 1985 that global nonproliferation norms were too easily cast aside during

times of crises to be counted upon for security. In both cases, the approach to nonproliferation norms was consistent with the two countries' different conception of security. Iran's pre-1979 focus on the Arab world, for example, was reflected in the early embrace of nonproliferation. Shah Mohamed Reza Pahlavi had an incentive to prevent the spread of nuclear weapons to the countries he viewed as a threat. Turkey's focus on the Soviet Union resulted in Ankara foregoing signature, owing to concerns about the Treaty's impact on Turkey's nuclear weapons centric battle plan. The data suggests that these conceptions nonproliferation norms were independent of humanitarian considerations, thus casting doubts on the notion of a "nuclear taboo" acting as an overarching restraint on Turkish and Iranian decision-making.

Chapter 5 looks beyond the state as the unit of analysis, in favor of key decision-makers. This chapter analyzed how individual key-decision makers approached the United States' Atoms for Peace offer, the 1973 decision to pursue nuclear energy, and then Iran's decision to pursue nuclear weapons in 1984. In this regard, this chapter differs from the previous two because of the singular discussion about the Iranian leadership's decision to pursue nuclear weapons in 1984. Yet, in all cases, this section focused on the individual's conception of nuclear energy/weapons and how those conceptions influence policy-making. In doing so, the chapter identifies key decision-makers, and how they influenced the direction of each country's nuclear programs.

The data suggests that the direction of each country's nuclear program reflected the preferences of the person in charge. As such, the bureaucracy took direction from the program's leadership. The leadership also had a tendency to use widely held "myths" about nuclear energy to justify decisions once they are made. Moreover, after Iran's illicit

nuclear program was revealed, widely held nuclear beliefs were grafted on to the founding tenets of the Islamic Revolution to justify the hitherto secret decisions to develop the front end of the nuclear fuel cycle. Taken together, the data suggests that myths are used to justify decisions made ex-post facto, rather than actually drive the key-decision maker to pursue nuclear weapons.

Turkey's nuclear decision-making reflected the country's historic energy poverty and its lack of financing options to procure nuclear reactors. Furthermore, after the country switched from a statist economic model to export oriented capitalism, Turkey adopted a unique financing model, whereby it requires the vendor to finance, build, own, and operate the reactor. In this regard, Turkey's approach to nuclear energy differed considerably from Iran, which has relied on oil exports to fund its nuclear endeavors. For Turkey's former leader, Turgut Ozal, nuclear energy eventually became a vehicle to attract foreign direct investment, and was thus viewed as being ancillary to his far broader plans to change Turkey's economic system from autarky to export oriented capitalism. The Iranian leadership, in contrast, framed its post-1979 nuclear as the pursuit of technical independence – a key tenet of the Islamic Revolution.

The dissertation concludes with a recounting of the ways in which Turkey and Iran responded differently to similar inputs. The data suggests that similar states respond differently to similar inputs; underscoring how nuclear decision-making is multi-causal and therefore not beholden to one single theory explaining proliferation decision-making. Furthermore, the data indicates that key-decision makers shaped the direction of Turkey and Iran's nuclear program, which suggests that traditional unit of analysis –the state– fails to capture the nuances and complexities inherent in nuclear decision-making.

Further to this, this study found that key decision-makers make policy, and therefore the nuclear programs in Iran and Turkey reflected the policy-preferences of these key individuals. These individuals, in turn, have differing set of opinions/conceptions about the value of nuclear energy/weapons. These divergent dynamics suggests a critical take-away: to determine the dynamics of nuclear decision-making, one must look inside each country, identify key decision-makers, and document how they conceive of security and normative issues before making a determinative judgment about whether a country is likely to seek out nuclear weapons, or not. This model is in contrast to much of the focus on general abstract research, intended to identify a common set of "proliferation triggers" or "nuclear restraints" to explain proliferation decision-making more generally.

The data has one overarching implication for policy-making: the reasons for nuclear decision-making differ, even in similar states, and thus there is no one model that explains why countries choose to pursue nuclear weapons. Thus, before making a judgment about the proliferation dynamics of a region based on the abstract variable of security or norms, one must account for the different way in which key decision makers view these two concepts. To do so requires a deeper knowledge of key decision-makers, how they conceive of specific security issues, and whether those conceptions include a predilection towards nuclear weapons. In this regard, this study found that, per Alexander L. George and Andrew Bennett's argument about methodology, nonproliferation scholarship must be mindful of "how much gradations of a particular variable affect the

outcome in a certain case."[5] As such, state behavior may vary, depending on how they perceive of a potential "trigger" to proliferate (i.e., the security centric model of proliferation) compared to a potential restraint (i.e., how normative prohibitions against nuclear weapons impact key-decision makers.)

Based on these findings, this study has resulted in the author's formulation of a new hypothesis for nuclear decision-making: (1) Similar inputs *do not* result in similar nuclear decisions; (2) The availability of the heuristic influences nuclear decision-making. These two hypotheses raise an obvious question for future scholars: (1) Do individual conceptions of security concerns and nonproliferation norms drive policy-making in *different* countries? To test this question, scholars could compare two similar states (like this study) or examine two dissimilar states. In doing so, broader conclusions about the dynamics of proliferation can be discerned to help deepen the current scholarship about dynamics of proliferation. However, in all cases, scholars must be mindful that the lessons learned about one state may, in fact, not be transferable to another; depriving the nonproliferation field of a one size fits all approach to the dynamics of proliferation in different states.

[5] Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in Social Sciences,* p. 25.

Chapter 2: Theories of Proliferation and Methodology

After the development of nuclear weapons in 1945, much of the scholarly debate has equated the dynamics of proliferation with great power relations, and thus a symbol of the state's efforts to either acquire greater power, or balance against the power acquired by a rival. Beginning in the 1960s, a rival school of thought emerged, attributing the lack of proliferation to growing normative constraints against the use of nuclear weapons. Further still, more recent scholarship has focused on the role individual's play in nuclear decision-making, and whether a leader's conception of nuclear energy/weapons underpins a state's approach to nuclear decision-making. This chapter reviews the dominant theories of proliferation, before turning to this study's methodology from which these theories are tested in the following analytical chapters.

The study of proliferation has traditionally been dominated by the realist school of thought; thereby based on the assumption that rational actors will seek out nuclear weapons as a means of self-help and to maximize state power. Realism is premised on the assumptions that the world is anarchic and states turn inwards to balance against threats. Hans Morgenthau, whose work helped to create realism, argued that rational leaders work to accumulate more power. Thus, while Morgenthau acknowledges that states sometime make decisions without power considerations in mind, these decisions are rare and apolitical.[6] After the use of nuclear weapons in 1945, realist scholars attributed the

[6] Hans Morgenthau, *Politics Among Nations: The Struggle for Peace* (New York: McGraw Hill, 1948).

proliferation of nuclear weapons to state of international politics, and the need to acquire the means with which to balance against external threats.[7]

The United States' development and use of nuclear weapons, therefore, prompted the Soviet Union to pursue a nuclear weapon. The Soviet nuclear test in 1949, in turn, put in place the conditions needed for the further proliferation of nuclear weapons to the United Kingdom (1953) and France (1960). China's nuclear program resulted from the United States threat to use nuclear weapons against Chinese targets during the Korean War, which ultimately explains why India developed nuclear weapons. India's program, in turn, fueled Pakistan's interest in nuclear weapons. This understanding of the drivers of proliferation lends itself to the proliferation chain analysis wherein the acquisition of nuclear weapons will prompt a rival state to pursue nuclear weapons, in order to balance against a nuclear threat. Indeed, such a decision would be rational, owing to the destructive power of nuclear weapons, which could tangentially give a nuclear weapons state the means with which to coerce its rival.

Similar to this, neorealist theory includes the same basic assumptions as realism, albeit with more attention paid to the structural differences that drive decisions related to war and peace.[8] Based on this understanding of the drivers of proliferation, realists and neorealists argue that the possession of nuclear weapons allows for states to balance against existential threats. For this reason, John Mearsheimer, Stephen Van Evera[9], and

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[7] The most important work on neorealism is by Kenneth N. Waltz, *Theory of International Politics* (New York: Random House, 1979).

[8] Kenneth N. Waltz, "The Origins of War in Neorealist Theory," *Journal of Interdisciplinary History,* vol. 18, no. 4, The Origin and Prevention of Major Wars (Spring, 1988), pp. 619-620.

[9] Stephen Van Evera, "Primed for Peace: Europe after the Cold War," *International Security,* vol. 15, no. 3 (Winter, 1990-1991), pp. 7-57.

Benjamin Frankel[10] argued that the spread of nuclear weapons after the collapse of the Soviet Union was inevitable, owing to balance of power issues in Europe, Eastern Europe, and Asia after the end of bipolarity.

To this end, these scholars argued that Germany, Japan, and Ukraine would pursue nuclear weapons, in order to account for historical rivalries and the need to balance potential foes in the multi-polar post-Cold War world. This builds on the aforementioned proliferation chain argument wherein the acquisition of nuclear weapons to balance against a rival will similarly prompt another regional state to initiate its own nuclear weapons program.[11] Lewis Dunn and Herman Khan, writing in *Trends in Nuclear Proliferation,* outlined fifteen proliferation scenarios that build on the proliferation chain narrative. Whilst the study accounted for the influence of subjective factors like the notion of "prestige," the findings are closely linked to the assumptions made in neorealist/realist theories in that they ascribe decision-making to balancing considerations. Before publishing this work, Dunn warned in a private briefing to the U.S. State Department about the potential for a regional proliferation chain, whereby a Pakistani nuclear weapons program could prompt Tehran to seek out nuclear weapons, which would then prompt Ankara to do the same to match its neighbor's power.[12]

This linking of state-decision making to reactive policy-making, in turn, was the centerpiece of Dunn's follow-on work on the subject of reactive proliferation making in

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[10] Benjamin Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation," vol. 2, no. 3/4 (Winter, 1991), pp. 37-78.
[11] Scott D. Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," *International Security*, vol. 21, no. 3 (Winter 1996-97), pp. 54-86.
[12] Lewis A. Dunn, Hudson Institute, "Iran and Nuclear Weapons," Briefing Notes for Office of Director, Near East/South Asia Region, International Security Affairs, Major General Gordon Sumner, Jr., The Pentagon, July 29, 1975, Freedom of Information Act Release, http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc08.pdf.

1976, with co-author William Overholt. In this follow-on article to *Trends in Nuclear Proliferation,* the authors argue that reactive decision-making underpin proliferation decision-making; suggesting that the future drivers of proliferation will be akin to the proliferation chain argument, and thereby "self-reinforcing." As William Potter and Gaukhar Mukhatzhanova note, the aforementioned Dunn/Khan forecast "has yet to be borne out," but nevertheless "chain metaphors have become the terminological norm…for discussions of future proliferation."[13]

Yet, despite these pessimistic scenarios, most states that have the technical capacity to begin nuclear weapons programs have chosen to forego weapons development. This lack of proliferation has prompted a reevaluation of the linkage between realism/neo-realism and proliferation. To account for anomalies in realist/neo-realist assumptions versus outcomes, so-called defensive and neoclassical realists have sought to include state preferences, beliefs, and international institutions in realist/neo-realist's methodological framework. This expansion, in turn, leaves only two core realist assumptions: rationalism and anarchy.

The erosion of the basic assumptions underpinning realism has raised methodological questions about the theory itself, particularly as it applies to proliferation forecasting. According to Jeffrey W. Legro and Andrew Moravcsik, this expansion of key assumptions has made the notion of realism so "malleable," that it "now encompasses nearly the entire universe of international relations theory (including current liberal, epistemic, and institutionalist theories) and excludes only a few intellectual

[13] William Potter and Gaukhar Mukhatzhanova (eds.), *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory, Volume I* (Stanford: Stanford University Press, 2010), p. 3.

scarecrows (such as outright irrationality, widespread self-abnegating altruism, slavish commitment to ideology, complete harmony of state interests or a world state)."[14] Legro and Moravcsik's critique of modern realism hinges on methodological issues tied to the lack of core assumptions, which thereby prevents the proper testing of realist hypotheses.[15]

Indeed, the history of nuclear decision-making is starkly at odds with the pessimistic assumptions associated with neorealist/realist scholars, which has resulted in nonproliferation scholars studying the notion of nuclear restraint. One argument for restraint stems from the oversized role the two superpowers played during the Cold War. Thus, absent bipolarity, new power dynamics in multi-polar Europe could trigger further proliferation. Mearsheimer, for example, argued, "The departure of the superpowers from Central Europe would transform Europe from a bipolar to a multipolar system," raising the specter of states seeking nuclear weapons to balance, or to achieve military superiority. Mearsheimer argues that the spread of nuclear weapons would indeed be the "least dangerous option" for post-Cold War Europe, albeit only if "the process is well-managed by the current nuclear powers."[16]

Contrary to the Mearsheimer argument, William Potter argues that the United States and Russia retained an overarching interest in preventing proliferation after the end of bipolarity. This shared interest, which has its roots in shared concerns about the Chinese nuclear test in 1963, resulted in the two countries pursuing near identical

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[14] Jeffrey W. Legro and Andrew Moravcsik, "Is Anybody Still a Realist*?," International Security*, vol. 24, no. 2 (Fall, 1999), p. 7.
[15] *Ibid,* p. 8.
[16] John J. Mearsheimer, "Back to the Future: Instability in Europe after the Cold War," *International Security*, Vol. 15, No. 1 (Summer, 1990), p. 8.

approaches to nonproliferation.[17] This cooperation continued after the end of the Cold War; notably the two sides worked together on nonproliferation issues in the post-Soviet states of Kazakhstan, Belarus, and Ukraine to remove Soviet era nuclear weapons from these newly created states.

After the end of the Cold War, Iraq's clandestine nuclear program seriously challenged the nonproliferation order. In this case, the international community responded with the creation of a new and more comprehensive safeguards arrangement dubbed the Additional Protocol. This tool, in turn, has since been counted upon (between 2003-2005; post-2015) to verify Iran's declaration to the IAEA after its clandestine nuclear program was revealed in 2002. The internalization of the nonproliferation norm resulted in more weight being given to neo-liberal arguments about nuclear decision-making. Like neo-realism, neo-liberal institiutionalists assume that the international order is anarchic and that states pursue policies based on self-interest. To do so, states pursue economic advancement, and are thereby more inclined to cooperate with one another to mitigate shared security concerns.[18]

If applied to nuclear decision-making, one could then infer that states will rely on global nonproliferation instruments, such as the Treaty on the Nonproliferation of Nuclear Weapons, for security, and international institutions like the International Atomic Energy Agency to cooperate on nuclear issues. However, as Potter and Mukhatzhanova note, "this proposition tends to be more implied than rigorously tested, and relatively few

[17] William C. Potter, "U.S. – Russian Cooperation for Nonproliferation," in Sharyl Cross and Marina A. Oborotova, eds., *The New Chapter in United States-Russian Relations: Opportunities and Challenges* (Westport, CT: Praeger, 1994), pp. 39-55.
[18] Robert Axelrod and Robert O. Keohane, "Achieving Cooperation under Anarchy: Strategies and Institutions," *World Politics*, vol. 38, no. 1 (October, 1985), pp. 226-254

studies have south to demonstrate the influence of nonproliferation institutions on nuclear weapons restraint."[19]

Etel Solingen, in her book *Nuclear Logics*, put forward a liberal argument to explain why most states forego nuclear weapons, whereas a select few launch dedicated weapons programs. Solingen links nuclear decision-making to modes of "political survival" wherein countries with autarkic economic policies face fewer constraints when considering whether to develop nuclear weapons. Moreover, in these closed systems, leaders often ally with elements of the national security apparatus, which may be more predisposed towards a nuclear weapons capability for defensive reasons. Consequently, outward oriented governments – i.e. those that rely on export oriented capitalism – face greater proliferation constraints, owing to the composition of the ruling coalition, and a social contract with the citizens premised on economic growth. In nine case studies, Solingen compares nuclear decision-making in the Middle East versus that in Asia.

Contrary to neo-liberal institutionalism and realism, Solingen's study demonstrates that key decision-makers consider a wide array of factors when making choices. These choices also reflect differing opinions within states about the value of nuclear weapons – and relatedly, the value of remaining nuclear weapons free, or pursuing a nuclear weapons program.[20] As such, Solingen posits a causal relationship between internationalizing governments and denuclearization, whereas inward oriented regimes (predominantly represented by Middle Eastern governments) are more amenable to proliferation or pursuing a combative policy emphasizing nuclear latency.

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[19] William Potter and Gaukhar Mukhatzhanova (eds.), *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory, Volume I,* p. 5.
[20] Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia & the Middle East* (New Jersey: Princeton University Press, 2007).

Constructivist IR theorists have posited yet another explanation for the absence of proliferation. Constructivism accepts international anarchy, whilst arguing that international norms influence state behavior; thus introducing the notion that policy-making is influenced by human behavior. According to Martha Finnemore and Kathryn Sikkink, "In a wide variety of issue areas, norms researchers have made inroads precisely because they have been able to provide explanations substantiated by evidence for puzzles in international politics that other approaches had been unable to explain satisfactorily."[21] These nonproliferation norms, Nina Tannenwald argues, have resulted in the creation of a "nuclear taboo" against the use of nuclear weapons. This taboo has pushed states towards the nonproliferation norm as the best means with which to prevent the spread – and use – of nuclear weapons.[22]

Building on the notion of human influence on state decision-making, so-called "psychological" and "sociological" constructivists attribute specific nuclear decisions to individual leaders and their personal conceptions of the value of nuclear weapons; relatedly the equation of nuclear technology with political and economic independence/prestige/security. Jacques Hymans, author of *The Psychology of Nuclear Proliferation,* explains why so few "political leaders decided to endow their states with nuclear weapons."[23] Hymans' core argument "is that oppositional nationalist leaders push for the bomb, while others do not."[24] These "oppositional nationalists," according to

[21] Martha Finnemore and Kathryn Sikkink, "International Norm Dynamics and Political Change," *International Organization*, vol. 52, no. 4, (Autumn, 1998), p. 890.
[22] Nina Tannenwald, "Stigmatizing the Bomb: Origins of the Nuclear Taboo," *International Security,* vol. 29, no. 4 (Spring, 2005), pp. 5-49.
[23] Jacques Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy* (Cambridge: Cambridge University Press, 2006), p. 1.
[24] *Ibid,* p. 13.

Hymans, "see their nation as both naturally at odds with another external enemy, and as naturally its equal if not superior," and therefore "should want the bomb."[25]

Hymans' argument is built, in part, upon the work of Ole Holsti, a political scientist at Duke University, who noted:

> It is generally recognized that an individual's behavior is in large part shaped by the manner in which he perceives, diagnoses, and evaluates his physical and social environment. Similarly, it is recognized that in order to experience and cope with the complex, confusing reality of the environment, individuals have to form simplified, structured beliefs about the nature of their world.[26]

Holsti's approach to decision-making, in turn, is based on the work of Amos Tversky and Daniel Kahneman, who argue humans rely subjective variables, or the availability of the heuristic when making non-routine decisions about things with which they have no experience. This refers to psychological research suggesting that "when faced with the difficult task of judging probability or frequency, people employ a limited number of heuristics [i.e., mental shortcuts taken when making non-routine choices] which reduce these judgments to simpler ones," using the "strength of association as a basis for the judgment of frequency."[27] In other words, people tend to rely on "gut feelings" to process complicated decisions about things they know little about, which Hymans refers to as a "leap in the dark" when leaders embark on a nuclear weapons program.[28]

Itty Abraham, a so-called sociological constructivist, goes one step further than Hymans through his work to try and understand the cultural context that shapes a

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[25] *Ibid,* p. 2.
[26] Ole R. Holsti, "Cognitive Process Approaches to Decision-Making," *American Behavioral Scientists,* vol. 20, no. 1 (September/October, 1976), p. 12.
[27] Amos Tversky and Daniel Kahneman, "Availability: A Heuristic for Judging Frequency and Probability," *Cognitive Psychology,* vol. 4 (1973), pp. 207-232.
[28] Jacques Hymans, *The Psychology of Nuclear Proliferation*," p. 16.

decision-maker's unique worldview.[29] Abraham argues that post-colonial states "fetishized" nuclear technology; using the development of nuclear related technologies for popular political gain designed to connote political strength, independence, and state power.[30] Abraham uses the case of India's nuclear program to demonstrate the link between the "post-colonial" urge to use the symbol of mastering nuclear technology as the means with which to ensure their place in the club of sovereign states. This emphasis on nuclear technology, in turn, allowed for leaders with nuclear weapons ambitions to build take advantage of what may have started as a peaceful nuclear program to proliferate. Abraham's work underscores the ways in which culture influences decision-making, whilst also accounting for individual and domestic debates about nuclear weapons/nuclear energy.

Peter Lavoy has sought to bridge the gap between the so-called psychological/sociological constructivists and realists. Lavoy argues "a government is likely 'to go nuclear' when proficient and well positioned individuals who want their country to build nuclear bombs, exaggerate security threats to make the 'myth of nuclear security' more compelling." The opposite is also true: mythmakers may also believe nuclear weapons make the country less secure and therefore argue for restraint.[31] The success of either myth, Lavoy asserts, depends on three factors: the compatibility of the nuclear myth with cultural norms; the mythmaker's ability to convince the key decision-

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[29] Itty Abraham, *The Making of the Indian Atomic Bomb: Science, Secrecy and the Postcolonial State* (New York: St Martin's Press, 1998); Hymans, "The Study of Nuclear Proliferation and Nonproliferation," in *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory, Volume I,* p. 33.
[30] *Ibid,* pp. 18-20.
[31] Peter R. Lavoy, "Nuclear Myths and the Causes of Nuclear Proliferation," *Security Studies,* vol. 2, no. 3/4, (Winter, 1993), p. 192.

maker of the saliency of nuclear weapons; the mythmakers inter-bureaucratic success in diverting funds to support a nuclear weapons program.[32]

In this regard, Lavoy's argument focuses on the inter-bureaucratic political maneuvering needed to support a weapons program, rather than the "trigger" or restraint that may push a state to proliferate. As such, policymakers must account for a leader's statements about the bomb, internal policy debates, and the movement of key "mythmakers" to better judge whether a state intends to proliferate.[33] Similar to this, Scott Sagan, in his seminal work, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," presents an analytical framework comprising three proliferation models: the security model, the domestic politics model, and the norms model. Included in this model is the argument that powerful bureaucratic actors, working within the state's scientific and military bureaucracies, could put pressure on key decision-makers to pursue nuclear weapons.[34]

This dissertation focuses on Turkish and Iranian nuclear decisions to determine the so-called dynamics of proliferation/nonproliferation in each country. In doing so, this study addresses a key lacuna in nonproliferation scholars – the use of process tracing to compare nuclear decision in two different states that made different nuclear decisions. In doing so, this dissertation explores the domestic and international contexts in which Iran and Turkey made nuclear decisions.

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[32] Peter R. Lavoy, "Nuclear Proliferation Over the Next Decade: Causes, Warning Signs, and Policy Responses; Strategic insights," *Nonproliferation Review,* vol. 13, no. 3 (November, 2006), pp. 435-436.
[33] *Ibid,* pp. 438-441.
[34] Scott D. Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," *International Security*, vol. 21, no. 3 (Winter, 1996-97), pp. 54-86.

According to Potter and Mukhatzhanova,"A growing body of research suggests that one cannot properly understand nuclear weapons (non)proliferation without reference to the domestic context in which nuclear decisions are made…Although the growth of alternative models of nuclear choice is a welcome development, there remains a paucity of theoretically informed research on the dynamics of nuclear proliferation."[35] Similarly, Hymans notes, "the way forward for the proliferation literature is to develop our theories and to rigorously test new theoretical developments using systemic process training…The cutting edge of the proliferation literature today tries to explicate in detail the political processes that generate *different* nuclear choices."[36]

The selection of Iran and Turkey indirectly addresses other areas of interest in nonproliferation and strategic Middle Eastern studies[37] and helps to enrich the ongoing debate about why states proliferate,[38] owing to Turkey's adoption of nonproliferation as a key component of its national security strategy in 1991, and Iran's decision to proliferate

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[35] William Potter and Gaukhar Mukhatzhanova (eds.), *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory, Volume I,* p. 5.

[36] Jacques C. Hymans, "The Study of Nuclear Proliferation and Nonproliferation," in *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory, Volume I,* eds. William Potter and Gaukhar Mukhatzhanova (Stanford: Stanford University Press, 2010), p. 37.

[37] One such area is the concept of "nuclear reversal" in Iran in 1979 and 2003. Ariel Levite analyzes the concept of "nuclear reversal," whereby a government decides to "to slow or stop altogether an officially sanctioned nuclear weapons program." However, his work does not discuss the case of Iran in detail. See: Ariel E. Levite, "Never Say Never Again: Nuclear Reversal Revisited," *International Security,* Vol. 27, no. 3 (Winter, 2002/03), pp. 59-88.

[38] In doing so, the two case studies build on Scott Sagan's assertion that "The challenge for scholars is not to produce increasing numbers of detailed, but a-theoretical, case studies of states' nuclear proliferation and restraint decisions; it is to produce theory-driven comparative studies to help determine the conditions under which different causal forces produced similar outcomes." Scott D. Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," *International Security*, vol. 21, no. 3 (Winter, 1996-97), pp. 54-86.

in 1985. The comparison is particularly apt due to the two countries' similarities: these neighboring states share an imperial history, a common religion (albeit with a mjaoryt of the population from different sects), have a common border, are both highly centralized, and began their nuclear programs with American assistance in the mid-1950s. Thereafter, they faced similar technical constraints in the 1960s, and pursued nuclear energy programs in the 1970s - only to make different decisions about nuclear weapons starting in the 1980s.

By tracing the process of Turkish and Iranian nuclear decision making from its onset to date, this dissertation seeks to maximize the total number of observations that allow for the identification of the different causal factors informing both countries' *different* nuclear decisions. And while this work focuses only on these two cases, the findings could be used to explain the variance in nuclear decision-making in other states that are interested in pursuing nuclear energy for either peaceful or military ends.[39]

The current nonproliferation/Middle Eastern scholarship focuses heavily on Ankara and Tehran's recent nuclear histories rather than the full breadth of their nuclear choices. In doing so, the scholarship lacks a theoretical framework, and is thereby prone negative and probabilistic assessments of future state behavior. For example, Turkey scholars Leon Feurth,[40] Henri Barkey,[41] and Jessica Varnum[42] argue that a combination

[39] As of 2008 "at least thirteen countries throughout the greater Middle East have recently announced new or revived plans to explore civilian nuclear energy." Mark Fitzpatrick (ed.), *Programmes in the Middle East: In the Shadow of Iran* (London: International Institute for Strategic Studies, 2008).

[40] Leon Fuerth, "Turkey: Nuclear Choices amongst Dangerous Neighbors," in Kurt Campbell, Robert Einhorn, Mitchell Reiss (eds.), *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices* (Washington, DC: Brookings Institution Press, 2004), pp. 145-75.

of growing Turkish nationalism, the increased threat posed by Iran, the erosion of the U.S. security guarantee, and a withdrawal of U.S. tactical nuclear weapons from Europe could prompt Turkish leaders to reevaluate their commitment to the nonproliferation regime. Yet in making these observations the three scholars narrowly focus on Turkey's propensity to proliferate, rather than identify the multi-causal and historical factors that have contributed to Ankara's approach to nuclear issues and how those factors have shaped its current nuclear policies. These studies, therefore, are probabilistic in their determination about future proliferation behavior, rather than based on what one expects Turkey to do given its place in a bevy of constraints influencing decision-making.

This omission, in turn, prevents a more in-depth analysis of Turkish nuclear decisions. And in so doing, these analyses do not consider the way in which Turkish leaders have, since the end of the Cold War, decreased the role of nuclear weapons for national security in favor of conventional weapons, while also embracing the nonproliferation norm to defend against potential proliferators like Iran. Moreover, the current studies discount the role economics play in Ankara's approach to nuclear issues and do not discuss how Turkey's reactor financing model hinders the development of nuclear weapons. Similarly, while Mustafa Kibaroglu has extensively discussed Turkey's

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[41] Henri Barkey, "Turkey's Perspectives on Nuclear Weapons and Disarmament," in *Unblocking the Road to Zero: Perspectives of Advanced Nuclear Nations* (Stimson Center's Nuclear Security Studies, September 2009), http://carnegieendowment.org/2009/09/22/turkey-s-perspectives-on-nuclear-weapons-and-disarmament/2de9.

[42] Jessica Varnum, "Turkey in Transition: Toward or Away from Nuclear Weapons?," *in* Potter and Mukhatzhanova (eds.), *Forecasting Nuclear Proliferation*, pp. 229-54.

nuclear policies,[43] his research has yet to account identify how economics and project financing considerations have driven Turkish nuclear decision-making since 1973.[44]

In fact, the more realistic reason for Turkey's limited nuclear progress is its unique financial requirements and the inability of external financiers to provide funding for the building of a Turkish reactor. It will be argued in this dissertation that Ankara's pursuit of the Build, Operate, Own financing model help explain the underlying factors that Turkish leaders consider when making nuclear decisions. The nuclear energy decision, therefore, isn't simply about nuclear energy but includes numerous other variables that leaders must take into account when making nuclear policy. This analysis allows for the identification of key subjective variables that influence key decision-makers, which then allows for the scholars to identify the variables underpinning "domestic decision-making," or the dynamics of proliferation decision-making.

In the case of Iran, the bulk of the scholarship focuses on the post-1985 enrichment program, rather than on the Shah's early nuclear decision-making, the reasons for the program's expansion in 1974, and the Islamic Republic's nuclear policies starting in the 1980s. Little work, for example, has been done on the Islamic Republic's decision-making between 1979-1984 and the reasons for cancellation of the Shah's nuclear program.

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[43] See, for example,: Mustafa Kibaroglu, "Turkey's Quest for Nuclear Power," *Nonproliferation Review,* vol. 4, no. 3 (Spring/Summer, 1997), pp. 33-44; idem, "Turkey and Shared Responsibilities," in *Shared Responsibilities for Nuclear Disarmament: A Global Debate* (American Academy of Arts and Sciences, 2010); idem, "Acceptance and Anxiety: A Warm Reception: Turkey (Mostly) Embraces Obama's Nuclear Posture," *Nonproliferation Review*, 18/1 (March 2011), pp. 201-217.

[44] Idem, "Turkey's Quest for Peaceful Nuclear Power."

Ambassador Dore Gold, for example, focuses heavily on Tehran's clandestine nuclear enrichment program, the Iranian leadership's approach to the nuclear negotiations with the P5+1 (The United States, Britain, France, China, Russia, and Germany), and the way in which nuclear weapons compliment the worldview of the regime's elites. Yet he does not discuss the evolution of Iran's program and the ways in which the origins of the program - as far back as 1957 - have influenced the leadership's current approach to nuclear issues.[45]

The most detailed book about Iran's nuclear program is David Patrikarakos' *Nuclear Iran: The Birth of an Atomic State.*[46] It does not, however, discuss Iran's nuclear decision-making in the 1950s and 1960s nor does it mention Mohsen Fakhrizadeh, who, beginning in 1999, has allegedly overseen nuclear weapons specific experiments. Saira Khan also details Tehran's nuclear history in *Iran and Nuclear Weapons: Protracted Conflict and Proliferation,*[47] but does not compare its decision-making with a state that opted not to proliferate, despite the presence of external security threats and protracted conflicts.

Seyed Hossein Mousavian, the former head of the Foreign Relations Committee of Iran's Supreme National Security Council and spokesman for its nuclear negotiating team, does discuss Tehran's early nuclear decision-making in his memoir *The Iranian Nuclear Crisis*. However, his historical recounting does not document a number of critical elements like the Shah's relative disinterest in nuclear-related issues until the late

[45] Dore Gold, *The Rise of Nuclear Iran: How Tehran Defies the West* (Washington, DC: Regenry Publishing Inc., 2009).
[46] David Patrikarakos, *Nuclear Iran: The Birth of an Atomic State* (London: Tauris, 2012).
[47] Saira Khan, *Iran and Nuclear Weapons: Protracted Conflict and Proliferation* (London: Routledge, 2010).

1960s-early 1970s, the reasons for the Islamic Republic's embrace of nuclear technology in 1982, or the factors that contributed to the 1985 decision pursue an enrichment program. Moreover, the bulk of the narrative is a first person recounting of Iran's post-2003 negotiations with the EU-3 (Britain, Germany, and France) rather than a thorough documentation of the nuclear decisions made before the negotiations began in 2003.[48]

Similarly, the International Institute for Strategic Studies' dossier, *Iran's Nuclear, Chemical and Biological Capabilities: A Net Assessment,* despite briefly documenting Tehran's nuclear program before the Islamic Revolution, devotes much of the study to Iran's enrichment program, the origins of the illicit procurement network to support the nuclear program, and the Islamic Republic's history of undeclared experiments.[49] Other notable works on Iran, including Nikki Keddi's *Modern Iran*[50] don't discuss the nuclear issue at all, while others, like the chapter on Iran in Etel Solingen's *Nuclear Logics*[51] are a summary of Tehran's recent nuclear work rather than a full recounting of factors that have shaped its nuclear decision-making.

To address these gaps in the literature, this dissertation provides a complete recounting of Iran and Turkey's nuclear decisions and places them within a methodological framework to help explain the reasons for Turkey and Iran's different nuclear decisions; to use the process tracing method to determine the domestic processes that underpinned these different decisions; and to test different nonproliferation theories.

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[48] Seyed Hossein Mousavian, *The Iranian Nuclear Crisis: A Memoir* (Washington, DC: Carnegie Endowment for International Peace, 2012).
[49] Gary Samore (ed.), *Iran's Strategic Weapons Programmes: A Net Assessment* (London: Routledge for the International Institute for Strategic Studies, 2011).
[50] Nikki R. Keddie, *Modern Iran: Roots and Results of Revolution* (New Haven: Yale University Press, 2006; 3rd edit.).
[51] Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East*. (Princeton: Princeton University Press, 2007), pp. 164-186.

This study examines the decisions Turkey and Iran made in reaction to a common set of inputs to help determine the causal reasons underpinning the two countries different nuclear decisions. In turn, the data is then used to identify the most salient subjective variable influencing policy-making, in order to understand if/why these two countries responded similarly to the same inputs.

Methodology: Responding to the Same Input

This work proceeds to document how Iran and Turkey responded to similar "inputs" and whether or not they resulted in similar "outputs," i.e. nuclear specific policy decisions. By doing so, the study will contribute to knowledge in three ways. First, it will use the process tracing method to detail the processes that resulted in different nuclear decisions. Second, it will determine which key subjective variables influence decision-making and how those variables impacted nuclear decisions. Third, this approach also allows for the testing of widely held theories about the reasons for nuclear decision-making. In total, these observations will be used to determine the dynamics of proliferation in each country and therefore account for the reasons that these two states made radically different nuclear decisions.

Traditional explanations for proliferation decision-making are based on a simple assumption: In an anarchic environment, state X will choose to pursue/forego nuclear weapons for Y reason. Therefore, when exposed to Y reason, other states will implement similar policies. This assumption is premised on the assumption of rational choice theory and that state behavior varies little globally. However, as noted in the previous chapter, substantial differences remain about why similar inputs result in different outcomes.

Expressed as an equation, X (input) + Y (nuclear decision) does not always equal Z (policy).

As such, there is still a debate about the mechanisms that lead states to choose "Y" policy; in other words, why does one state choose to embrace nonproliferation to address certain inputs, whereas others choose to seek out nuclear weapons? To address this lacuna in the nonproliferation literature, this study measures how two similar states – Iran and Turkey – responded to the same inputs and compares how/why their decisions differed.

Research Question: Do similar states respond similarly to the same external inputs?

Dependent variable: Iran and Turkey's nuclear decisions.
Independent variables: External inputs, which this study defines as: Security, Norms, and the influence of key-decision makers.
Hypothesis: Similar inputs should result in similar nuclear decisions.

Methodology

To control for bias, this study selected two states from the same region that were exposed to similar inputs and documented their subsequent nuclear decisions (outputs). This study identified a set of common inputs; from which the two states' outputs were then measured and compared. These common inputs are organized thematically and include the responses to the following inputs: security, norms, and the influence of key decision-makers. These general themes represent the consensus amongst the dominant nonproliferation theories that explain decision-making.

Security

To eliminate bias, this study measured Turkish and Iranian decisions a common set of security related inputs. This study sought to define the concept of security. To do so, this work expands upon the work of Stephen M. Meyer, who in his seminal work, *The*

Dynamics of Nuclear Proliferation, operationalizes threat as the presence or absence of three threat conditions.

1 – Nuclear armed adversary
2 – Adversary with a latent nuclear weapons capability
3 – Overwhelming conventional military threat

For the purposes of this study, threat is operationalized as follows:

1- Nuclear/WMD Armed Adversary
2- Nuclear/WMD Latent Adversary
3- Overwhelming conventional threat by Adversary
4- Internal Political and/or Armed Adversaries
5 - Hostile relations with a weaker state

This definition was then used to identify and score this study's common set of security related inputs. These security inputs include:

1. Soviet Union/Global Communist Movement
2. Doubts about Security Guarantees
3. Regional Proliferation
4. End of bipolarity

Based on the data, both Iran and Turkey faced a "HIGH" security threat during the Cold War. After the end of the Cold War, Turkey faced a "MEDIUM" security threat, whereas the Islamic Republic's threat level was still "HIGH." To address these threats, Iran and Turkey could pursue the following options:

Alternatives to build a bomb to counter security threat:
1- Alliances/Nonproliferation
a- Superpower alliance
b- Embrace Nonproliferation
2- Developing your non-nuclear weapon capabilities
3 – Nuclear Latency

This data was then used to test this study's central hypothesis: Similar inputs should result in similar nuclear decisions.

Nonproliferation Norms and Nuclear Restraint

To explain the phenomena of nuclear restraint, scholars have put forward variations explanations that are based on one of the four dominant theoretical narratives in proliferation studies: realism; neoliberal institutionalism; liberalism; and constructivistism. This study tests these theories by measuring Iran and Turkey's response to the following inputs:

Nuclear Restraints:
1- Treaties/Nonproliferation Agreements[52]
a- Safeguards, the IAEA, and the Treaty on the Nonproliferation of Nuclear Weapons
2- Trade/Internationalizing Political Model[53]
b- Economic s and Models of Political Survival
3- Humanitarian/International Acceptance[54]
c- The Nuclear Taboo[55]

This approach, in turn, allows for the findings to be used to identify the key dynamics of proliferation/restraint in these two countries. The data is then used to test this dissertation's hypothesis, in order to determine how these two states reacted to a set of common inputs.

Nuclear Mythmaking and Powerful Bureaucracies: The Role of Individuals

The final analytical chapter examines the role of key decision-makers in Iran and Turkey. This chapter identified a common set of inputs and the way in which key decision-makers made policy decisions in reaction to the following inputs:

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[52] This subset is based on the constructivist approach to nuclear proliferation and restraint. See: Axelrod and Keohane, "Achieving Cooperation under Anarchy: Strategies and Institutions," *World Politics*, vol. 38, no. 1 (October, 1985), pp. 226-254

[53] This subset is derived from the work of Etel Solingen. See: Solingen, *Nuclear Logics: Contrasting Paths in East Asia & the Middle East.*

[54] See: Tannenwald, "Stigmatizing the Bomb: Origins of the Nuclear Taboo," *International Security,* vol. 29, no. 4 (Spring, 2005), pp. 5-49.

[55] *Ibid.*

The Role of Individuals
1- Atoms for Peace and American Nuclear Assistance
2- The 1973 Energy Crisis

The data was then used to make determinative judgments about the reasons underpinning individual conceptions of nuclear energy/nuclear weapons in Iran and Turkey. This data is then used to explain Iran's decision to proliferate versus Turkey's nuclear restraint from the perspective of different decision-makers, rather than using the state as the means of measurement. In doing so, this section attempts to identify the critical subjective variables that different leaders/ key decision-makers in Iran and Turkey rely on when making nuclear decisions.

Determinants of Nuclear Decision-Making

Based on the data, this author then measured the processes by which decisions are made against that of this study's independent variables. These variables include the concepts of Security, Norms, and influence of key-individuals/decision-makers. This data, in turn, allows for the testing of this study's research question (Do similar states respond similarly to the same external inputs?) and the hypothesis (Similar inputs should result in similar nuclear decisions.)

The data is then used to identify which independent variable best has the most affect on Iranian and Turkish decision-making, or if nuclear decisions are multi-causal. Furthermore, if Turkish and Iranian nuclear decision is multi-causal, then this methodology helps scholars to identify the most important variables influencing decision-making. Once identified, scholars can then gain a better understanding of the different processes influencing Turkish and Iranian policy-making.

Conclusion

This study's findings suggest that different countries react differently to similar inputs. The data suggests that security considerations influence state behavior. However, Iran and Turkey made different decisions when faced with the same inputs. These differences stem from different subjective interpretations of the threat faced. As such, these differing policies reflected the key decision-makers' subjective understanding of the threat posed and thus resulted in different policy responses.

These different decisions were also present in the cases of nuclear restraint. Both Iran and Turkey have different conceptions of nonproliferation norms, as well as the salience of the taboo against the use of weapons of mass destruction. Furthermore, the data suggests that both countries have different understandings of the nonproliferation norm. In particular, the countries have divergent views about the fairness of the nonproliferation order.

These key differences suggest that even similar countries have different subjective understandings of common inputs. These key differences, in turn, result in different approaches to policy-making. Thus, while these two countries may adopt a similar policy (the signing of the NPT, for example), the reasons for doing so – or the dynamics of proliferation/restraint – differ considerably. This study also found that leaders have a tendency to follow a similar policy to that of their predecessors, suggesting that the concept of status quo bias[56] informs individual decision-making. Thus, once a policy is enacted, subsequent leaders adopt similar – if not identical – approaches to nuclear decision-making.

[56] William Samuelson and Richard Zackhauser, *Status Quo Bias and Decision-Making,* Journal of Risk and Uncertainty, vol. 1, no. 1 (Spring, 1988), pp. 9-10.

Based on this data, this study's hypothesis is null: Similar inputs *do not* result in similar nuclear decisions. Instead, this study found that nuclear decision-making in Iran and Turkey is multi-causal, and based on differing individual conceptions of a common set of assumptions about nonproliferation/norms.

Chapter 3: Threat Perceptions and Nuclear Decision-Making

After the end of the Second World War, Turkey and Iran faced a growing security threat from the Soviet Union. In the war's aftermath, the Soviet Union extended its political and military influence in to Bulgaria, along the Black Sea littoral, and down into modern day Georgia and Armenia. Similarly, the new Soviet border extended through Kazakhstan and modern-day Turkmenistan on Iran's northeastern border. Turkey and Russia have a long history of imperial rivalry and successive wars as well as contention over control of the Bosporus strait and the Dardanelles. Similarly, Russian forces had intermittently occupied large swathes of Iranian territory in the early twentieth century; including a full-scale invasion of the country during World War II in conjunction with British forces.

The development of nuclear weapons changed the security dynamics for both Iran and Turkey. Between 1945 and 1949, the United States retained its nuclear monopoly. This meant that Turkey and Iran did not face a direct nuclear threat; instead focused their efforts on defending against the Soviet Union's conventional superiority. The Soviet Union's 1949 test of a nuclear device further altered the region's security dynamics and raised the possibility of the use of nuclear weapons to support invading Soviet forces in Iran and Turkey.

This chapter documents how Turkey and Iran reacted to the same four security related inputs, using the aforementioned methodology:

- The Soviet Union and the threat of Global Communism
- Doubts about the U.S. security guarantee
- Regional Proliferation
- The end of bipolarity

The data was used to test this study's hypothesis: Similar inputs should result in similar nuclear decisions. In addition, it was also used to test neo-realist assertions about nuclear decision-making. As explained in the previous chapter, threat is operationalized as follows:

1- Nuclear/WMD Armed Adversary
2- Nuclear/WMD Latent Adversary
3- Overwhelming conventional threat by Adversary
4- Internal Political and/or Armed Adversaries
5 - Hostile relations with a weaker state

A state faces a HIGH security threat for the following reasons: The adversarial state is nuclear armed and/or has an overwhelming conventional military advantage. A state faces a MEDIUM security threat when it adversary is nuclear latent. A state faces a LOW security threat when it faces internal political/armed adversaries and/or has hostile relations with a weaker state.

Based on this system, neo-realist scholars contend that a state would seek out nuclear weapons when faced with a HIGH security threat. In other words, a HIGH security threat leads to an interest in nuclear weapons and then a decision to proliferate. The state may not ultimately succeed in developing nuclear weapons, but the reasons for failure are related to other factors, including: superpower coercion, technical restraints, or a change in relationship with the adversary.

This chapter's aim is to test this conviction using this study's methodology to determine how security related inputs affected nuclear decision-making. The first section adds a layer of methodological analysis to make a determinative judgment about the threat posed by the common inputs. This data is then used to compare the policy-making process in both countries to determine the dynamics of proliferation.

Measuring Nuclear Latency vs. Nuclear Armed

To measure the concept of nuclear latency (wherein the state has the capability to rapidly build a nuclear device, but has not done so), this study sought to create a new model that blends technical elements – i.e. the technical processes needed to develop a nuclear weapon – with the leadership's comments about the value of nuclear weapons. This model assumes that a new nuclear state would not necessarily make the decision to test a first generation nuclear device. This concept of nuclear latency has prompted nonproliferation scholars to define nuclear-armed states as those having one significant quantity (SQ) of fissile material (25 kg of highly enriched uranium, or 6 kg of separated plutonium).

A state, therefore, would not necessarily have to test a weapon, but rather pursue the Israeli model of proliferation, which Avner Cohen and Benjamin Frankel have dubbed "the opaque model of proliferation".[57] It is widely presumed that Israel has developed a large and sophisticated arsenal, and managed to deploy them on multiple different delivery vehicles without testing. Similarly, Pakistan and South Africa also developed nuclear weapons without testing. However, the reliance on the SQ metric is also problematic. First, Japan has tons of separated plutonium, but has never made the political decision to construct a nuclear weapon. Second, in the case of the DPRK, even a determined proliferator may struggle to design a usable weapon. As such, when using the SQ measurement, one must also make a determination about intent – and this

[57] Avner Cohen and Benjamin Frankel, "Opaque Nuclear Proliferation," in *Opaque Nuclear Proliferation: Methodological and Policy Implications* ed. Benjamin Frankel (London: Frank Cass & Co. Ltd., 1991), pp. 14-44.

determination could lead to biased conclusions about whether a state is, in fact, seeking a nuclear weapons capability, or pursuing a peaceful nuclear program.[58]

For simplicity, this study dismisses the possibility that a state could simply buy a nuclear weapon. Indeed, there has never been a case of one state selling a nuclear weapon to another, despite documented instances of states inquiring about procuring nuclear weapons from a nuclear-armed ally.[59] To develop a nuclear weapon, a proliferating state would have to acquire the raw materials (uranium) and manufacturing infrastructure to acquire an SQ. If a state were interested in highly enriched uranium (HEU) production it would need: mining and milling equipment; conversion facilities; enrichment equipment; and the technical know how to convert 80-90% enriched uranium into uranium metal before fashioning that metal into precise hemispheres. Thereafter, a state would have to fabricate a neutron initiator and, in the case of HEU, either build a multipoint system that uses conventional explosives to generate a uniform shock wave to compress the fissile core, or a "gun type" projectile to fire one "uranium bullet into another" to achieve criticality.

If a country were to opt for the plutonium route, it would require much the same infrastructure, including: mining and milling equipment; conversion facilities; fuel rod fabrication facilities; a nuclear reactor; reprocessing technology; in addition to the

[58] Jacques C. Hymans, "When Does a State Become a 'Nuclear Weapons State'," in *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory, Volume I,* eds. *William Potter and Gaukhar Mukhatzhanova* (Stanford: Stanford University Press, 2010), p. 103.

[59] In 1963, Egypt asked to purchase weapons usable fissile material and a complete nuclear weapon from the Soviet Union. Four years later, Nasser made the same request of China. Libya inquired about purchasing nuclear weapons from China in 1970, Pakistan in 1973, and then India in 1974. See: Julian Schofield, *Strategic Nuclear Sharing* (London: Palgrave Macmillan, 2014), p. 48.

aforementioned processes to fabricate the actual nuclear device (However, a state could not rely on the "gun method" for a plutonium device, so it would need to develop a multipoint initiation system).

These weaponization processes allow for the construction of model, from which one can determine a state's nuclear weapon status and if, indeed, it is nuclear latent. From this, one can then make a determination about the threat a state faces in order to measure how it constructed policies to address the nuclear latent threat.

To discern intent, this study relies on information regarding weapons specific experiments. Thus, if a state pursues the full fuel cycle and pairs these efforts with weapons specific experiments – but does not test – it is nuclear latent. To draw a further determination, this study combines this data with widely used technical measures to determine whether or not a state has access to a SQ. Thus, in the case of enrichment, a state will be considered nuclear latent only when it acquires the capability to produce weapons usable fissile material.

To determine the length of time a state would need to acquire an SQ of HEU, one can use Separative Work Units (SWUs) to estimate the time needed to produce 25kg of HEU. As the time needed to enrich to 90 percent decreases, a state moves closer towards achieving nuclear latency. To test for latency on the plutonium side, one can also calculate the time required to "burn" a fuel rod in a reactor to maximize the amount of weapons usable plutonium and combine it with well-known estimates about how long it would take to separate the weapons usable plutonium from a burned fuel rod. A state would only be truly nuclear latent, once the time period to enrich/separate one SQ drops below 1-2 weeks.

Admittedly, these measures are imprecise. After enriching to 90 percent or separating the required plutonium, a state would then have to fabricate a nuclear device. Thus, even if a state were two weeks away from having one SQ, it would nevertheless need, by certain estimates, at least another year or so to develop a nuclear device.[60] The difference between a "nuclear latent" and "a nuclear weapons state" therefore is the length of time needed to design and fabricate a device, although, as mentioned above, the state may not test this first generation system. The time needed to do this – and indeed whether a state would have to then test this design – is the subject of incredible debate and beyond the scope of this study.[61] Nonproliferation scholarship, however, suggests that states interpret the dividing line between "nuclear latent" and "nuclear armed" differently. This subjective understanding, in turn, helps explain why few states are concerned about Japan's possession of separated plutonium, whereas many Arab states fear that Iran has achieved nuclear latency.

For the purposes of this study, nuclear intent was derived from leader's statements on the subject. If, for example, a member of the state's leadership expressed an interest in nuclear weapons, while the state also pursued all of the technical components needed to build a nuclear device, one can assume that the state has some interest in nuclear weapons. To accurately measure threat to then make a determination about nuclear decision-making, this data is then combined with Iran and Turkey's subjective understanding of nuclear latency/weapons. This then allows for a more precise comparison of Iran and Turkey's threat perceptions vis-à-vis potential adversaries that

[60] The weaponization process, according to Sig Hecker, former director of the Los Alamos National Laboratory, would take 1.5-2 years after the material is enriched to weapons grade. Author email interview with Sig Hecker, October 25, 2011.
[61] Hymans, "When Does a State Become a 'Nuclear Weapons State'," pp. 102-124.

pursued all, or some, of the criteria mentioned below. Moreover, it also creates a set of criteria to measure Iran and Turkey's nuclear intention and determine whether or not either country decided to pursue nuclear weapons.

Based on this data, this study defines a nuclear latent states as having the following characteristics:

Measuring Nuclear Latency	
Highly Enriched Uranium	**Plutonium**
Infrastructure	
Uranium mining	Uranium mining
Milling	Milling
Conversion to UF6	Fuel rod fabrication
Enrichment	Nuclear Reactor
Weapons Design Work (Hemisphere, Neutron initiator, Conventional explosives testing (shockwave generator, or gun type design)	Separation
	Weapons Design Work (Hemisphere, Neutron initiator, Conventional explosives testing (shockwave generator)
Subjective Variables	
Leader Statements	
Adversary Perception	

A nuclear-armed state, in turn, has fabricated a nuclear weapon and either announced it has a nuclear weapon, conducted a nuclear test, or is believed to be nuclear armed by a large number of states. Based on this data, it is possible to identify which states were nuclear latent and nuclear armed; how Iran and Turkey viewed the threats; to compare reactions to the same inputs; and if either Iran or Turkey are nuclear latent.

Input 1: The Soviet and Global Communist Threat

During the Cold War, Turkey and Iran only faced one nuclear-armed adversary: the Soviet Union. Moscow also possessed a considerable conventional advantage over

both Iran and Turkey. This study classified the threat during this time period as HIGH. To address this threat, Iran and Turkey could seek out nuclear weapons or pursue one, or combination of, the following options:

Alternatives to pursuing a nuclear weapon to counter a security threat:
1 – Alliances
a- Superpower alliance b- Nuclear guarantees
3 – Embrace Nonproliferation/Norms
4 – Developing your non-nuclear weapon capabilities
5 – Nuclear Latency (Nuclear hedging)
6 – Détente/Appeasement

Turkey: A NATO Ally

From the outset of the Cold War, Turkish politicians were concerned about Russian territorial ambitions; and in particular, Moscow's efforts to gain greater control of the Bosporus strait. During World War II, Turkey deftly managed to play the allied and axis powers off against one another to remain neutral up until the very end of the conflict. After the conflict ended, the Soviet Union managed to expand its territory. The Red Army and allied forces moved conventional forces along Turkey's western border with Bulgaria, in the Black Sea, and along much of Turkey's northeastern borders. In a 1951 National Intelligence Estimate, the United States' intelligence community concluded that Ankara would be able to resist a Soviet-led attack for two-to-three months before being overwhelmed. [62] The NIE noted that Turkey's geography made it particularly exposed to Soviet expansion because it lacked a credible air force or navy and Turkish territory was far from Western military centers of strength and encircled by

[62] National Intelligence Estimate, NIE-9, Turkey's Position in the East-West Struggle, February 26, 1951, PPS Files, Lot 64 D 563: Record Copies January-April 1951 in United States Department of State, *Papers relating to the foreign relations of the United States, The Near East and Africa*, 1951, vol. 5, pp. 1119-1126.

weak Western allies that would also be quickly overrun.[63] To balance against the Soviet threat, Turkey prioritized its relationship with the United States; thus choosing a strategy of superpower alliance.

Up until 1951, the United States remained skeptical of granting Ankara a formal security guarantee, owing to concerns about over extending its direct military guarantees in areas determined to be a secondary geo strategic importance. However, after concluding that a Soviet attack would threaten critical Western interests in the Mediterranean, Washington concluded that any attack on the Dardanelles would require an American response.[64] Turkey was subsequently invited to join the Alliance in 1951; Ankara officially joined NATO in 1952. Turkey's inclusion means that Ankara now has a collective security guarantee from the world's most powerful collection military alliance and, critically, a direct security guarantee from the United States.

Iran: A CENTO Ally

During World War II, British and Soviet troops occupied Iranian territory to secure allied oil and supply interests in the country. The invasion forced the Shah of Iran, Reza Pahlavi to abdicate in favor of his son, Mohammad Reza Shah Pahlavi. The Shah was soon forced from power, after nationalist forces led by Prime Minister Mohammad Mosaddegh nationalized the oil industry in 1951. After negotiations failed to come an agreement surrounding the status of the British administered Anglo-Iranian Oil Company

[63] Ibid.

[64] According to an American National Security Study: [Turkey] not only controls the important land, sea, and air routes (including the Turkish straits, which Russia has coveted for nearly 200 years) from the USSR to the Cairo-Suez area and the Middle East oil fields, but it offers bases from which the USSR could launch operations against the islands of Crete, Rhodes, and Cyprus and against communications in the Eastern Mediterranean and the Middle East. See: National Security Study, "The Position of the United States with Regards to Turkey," *ibid.*, pp. 1151-1162.

(AIOC) failed, the United Kingdom, U.S., and a smattering of pro-Shah allies inside Iran organized Operation TPAJAX: the plan to overthrow Mosaddegh and reinstate the Shah as Iran's leader. The operation unfolded over four days in August 1953 and resulted in the overthrow of Mosaddegh and the Shah's return to power.

Thereafter, the United States sought to empower the Shah and the Iranian armed forces. According to a classified American National Security Council report, "over the long-term, the most effective instrument for maintaining Iran's orientation towards the West is the monarchy, which in turn has the army as its only real source of power."[65] Like Turkey, Iran shared a northern and eastern border with Soviet allied proxy states. In 1953, John Foster Dulles first conceived of a "Northern Tier alliance" of Western allied Middle Eastern and Central Asian states, including: Turkey, Iraq, Iran, and Pakistan to defend against a Soviet invasion of the Middle East. The efforts to build a Northern Tier alliance to defend Western interests in the Middle East began in the late 1940s, but only really began to take shape in 1954, after the signing of the Pakistani-Turkish agreement.[66]

Thereafter, the nascent structure's headquarters was moved to Baghdad in 1955, after Iraq agreed to join. The alliance was subsequently named the Baghdad Pact. In as early as 1954, the Shah expressed his support for the proposed alliance, but was concerned that the U.S. assistance given to Iran was inadequate, and that Iran would be

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[65] Statement of Policy by the National Security Council, United States Policy Towards Iran, NSC 5042, S/S-NSC files, lot 63 D 351, "NSC Memoranda", 2 January 1954, in the United States Department of State. Glennon, John P., Editor, *Foreign relations of the United States, 1952-1954. Iran, 1952-1954*, Volume X, U.S. Government Printing Office, 1952-1954, pp. 865-889.

[66] Michael J. Cohen, *Fighting World War Three from the Middle East: Allied Contingency Plans, 1945-1954* (London: Frank & Cass Co. Ltd, 1997), pp. 296-323.

the "weak link in the chain" of Middle East defense.[67] Iranian Prime Minister Hossein Ala originally stated that it would only join the pact if the U.S. provided Iran with greater assistance, recognized Iranian sovereignty over Bahrain, and guarantee that it would come to Iran's defense in the event of a Soviet attack.[68] After the U.S. refused, the Shah lessened the Iranian demands, and only asked for a U.S. security guarantee. The U.S. refused again, but President Eisenhower sought to reassure the Shah by telling him that an attack on Iran would be an attack on the "free world," and would therefore invite an American military response.[69] Ultimately, the Shah agreed to join the Baghdad Pact, telling Dulles that the decision to do so was "his policy" and that while he may be criticized, or the circumstances about joining might change, he "would never change it."[70]

The Baghdad Pact suffered its first setback in 1958, after the overthrow of the Western preferred King Faisal, and the subsequent empowerment of Arab nationalist Abd al-Karim Qasim (After Iraq's withdrawal, the alliance was renamed the Central Treaty Organization, or CENTO). The transition away from Hashemite rule in Iraq towards Arab

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[67] Possibility of Increasing Military Assistance to Iran in light of Its Possible Affiliation with the Baghdad Pact and CENTO, Top Secret, Letter State, June 27, 1955, Iran Revolution, IR00331, Digital National Security Archives, accessed on November 12, 2013.

[68] Memorandum From the Assistant Secretary of State for Near Eastern Affairs, South Asian, and African Affairs (Allen) to Under Secretary of State (Hoover), 22 Jue 1956, in the United States Department of State. Glennon, John P., Editor, *Foreign relations of the United States, 1952-1954. Iran, 1952-1954*, Volume X, U.S. Government Printing Office, 1952-1954, pp. 954-958.

[69] Expression of Appreciation to the Shah for Committing Iran to the Baghdad Pact and CENTO, Secret, Memorandum of Conversation, March 9, 1956, Iran Revolution, IR00337, Digital National Security Archives, accessed on November 12, 2013.

[70] Harry N. Howard, "The Regional Pacts and the Eisenhower Doctrine," *Annals of the American Academy of Political and Social Science*, vol. 401, America and the Middle East (May, 1972), pp. 85-94.

nationalism was a source of considerable concern in Iran; privately Shah made clear that he feared a three-pronged attack from the Soviet Union, Baathist Iraq, and Soviet allied Afghanistan.[71]

Nuclear Weapons: Divergent Perceptions about the Zagros Line

In 1953, the United States and the United Kingdom concluded that nuclear weapons were required to prevent Soviet forces from overrunning Iranian, Turkish, and Pakistani defenses along the Northern Tier. The battle plan called for a defense of the Zagros line against a Soviet attack, along with support from British, American forces, and Arab forces – backed by Western air power flying from bases in the region and in the UK –marching north from areas in the Levant to the front line. The battle plan envisioned the use of nuclear weapons, delivered both by tactical battlefield systems and aircraft. Turkey embraced the nuclear war plan. Iran did not.

In 1959, the United States presented an updated battle plan to defend the Zagros line to the Shah. During the presentation, the United States indicated that "there [was] a slight possibility of tactical nuclear weapons being used in case of a limited war there, but in such an event U.S. forces would carry a great part of the load and would be directly involved."[72] The Shah, however, dismissed the U.S. war plan all together by refusing to

[71] Memorandum from the Officer in Charge of Iranian Affairs (Bowling) to the Deputy Assistant Secretary of State for Near Eastern and South Asian Affairs (Hart), November 21, 1960, FRUS, *Near East region; Iraq; Iran; Arabian Peninsula,* vol. 12, pp. 709-711.
[72] Memorandum from the Officer in Charge of Iranian Affairs (Bowling) to the Deputy Assistant Secretary of State for Near Eastern and South Asian Affairs (Hart), November 21, 1960, FRUS, *Near East region; Iraq; Iran; Arabian Peninsula,* vol. 12, pp. 709-711.

"consider a defense based on the Zagros."[73] Instead, the Shah proposed that the United States provide the Iranian armed forces with greater conventional weapons; in particular, a modern air force.[74] The United States was skeptical, but nevertheless sought to appease the Shah by maintaining its level of conventional military of support for Iran, whilst also putting in place elements of the defense plan in other Northern Tier countries.[75]

Turkey, on the other hand, embraced nuclear weapons for the defense of its western and eastern borders. Ankara's nuclear war planning was contingent on two different factors: 1) Its NATO membership; 2) The American decision to forward deploy nuclear weapons in allied countries. In 1956, the United States and Turkey began formal discussions about basing nuclear weapons at Incirlik Air Force base in Adana.[76] In 1957, the NATO alliance agreed "to establish stocks of nuclear warheads, which will be readily

[73] The Shah, according to John W. Bowling, the Officer in Charge of Iranian Affairs, Office of Greek, Turkish and Iranian Affairs, Bureau of Near Eastern and South Asian Affairs, "refuse[d] to consider a defense based on the Zagros." See: Ibid

[74] The United States, on the other hand, planned for the Iranian forces to perform stay-behind guerilla operations because even a "400,000 man army with billions of dollars worth of equipment, would not do more than delay the USSR for a few days, and would be chewed to bits in the process." See: Ibid

[75] The United States does not appear to have abandoned the plan to use nuclear weapons to defend Iran. In as late as 1980, CENTCOM was worried the Soviets might blitz into Tehran to take advantage of the weak revolutionary government and invade Iran and Afghanistan. The battle plan set aside 20 SADMs, which Green Berets would use in mountain passes after parachuting into Tehran, presumably without Tehran's permission. See: Adam Rawnsley and David Brown, "The Little Boy," *Foreign Policy,* January 30, 2014, http://foreignpolicy.com/2014/01/30/the-littlest-boy/; David Crist, *The Twilight of War: The Secret History of America's Thirty Year War with Iran* (New York: Penguin Books, 2012).

[76] In April 1956 the U.S. military announced plans for the stationing of large numbers of ground forces, air forces, and "special" weapons (a euphemism for nuclear weapons) mainly in the Adana area. Telegram from the Embassy in Turkey to the Department of State, April 17, 1956, *FRUS, 1955-1957. Soviet Union, Eastern Mediterranean*, vol. 24, pp. 677-678.

available for the defense of the Alliance in case of need."[77] In 1959, Turkey and the United States concluded for the "Cooperation on the uses of Atomic Energy for Mutual Defense Purposes," which allowed for the United States to forward deploy nuclear weapons on Turkish territory.[78] Shortly thereafter, the United States deployed the first nuclear warhead – the W-7 – at Incirlik Air Base in Adana.

The archival evidence indicates that, beginning in the 1960s, Turkey sought to gain greater control over the nuclear weapons based on its territory. To safeguard against the inadvertent use of nuclear weapons, the U.S. instituted a "dual-key" arrangement with regards to forward deployed nuclear weapons. The weapons remained under U.S. custody, but the host nation retained the capability to deliver them – but only after given the order by NATO's Supreme Allied Commander (SACEUR). Turkey accepted the dual-key arrangement without any protests.

Turkey also accepted the need for the use of nuclear weapons to defend the Zagros line. As of 1968, Ankara supported the forward deployment of nuclear weapons

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[77] Final Communiqué, Chairman: Mr. P.H. Spaak, Secretary General of NATO, North Atlantic Treaty Organization, December 16-19, 1957, accessed on October 9, 2013, at: http://www.nato.int/docu/comm/49-95/c571219a.htm; The United States first deployed non-nuclear components – i.e., bomb casings and assemblies – outside of the United States in the United Kingdom in 1950, after the Department of Defense began to worry about American nuclear readiness after the start of the Korean War. In October 1952, the United States' Joint Chief of Staff (JCS) argued that it was "essential to operational readiness and military flexibility that nuclear components be deployed outside the Continental limits of the United States at the earliest practicable date." See: History of the Custody and Deployment of Nuclear Weapons (U): July 1945-1977, Prepared by the Office of the Assistant to the Secretary of Defense, February 1978, available at, http://www.dod.mil/pubs/foi/operation_and_plans/NuclearChemicalBiologicalMatters/306.pdf; Robert S. Norris, William M. Arkin and William Burr, "Where They Were," *The Bulletin of Atomic Scientists,* November 1, 1999, vol. 55, no. 26, pp. 26-35.

[78] Transmission of the exchange of notes regarding the entry into force of Agreement for the Cooperation on the uses of Atomic Energy for Mutual Defense Purposes, File no: 611.8297/7-2959, 29 July 1959, General Records of the Department of State, National Archives and Records Administration, RG 59, Box 2553.

along its northeastern border to blunt a Soviet attack; however, NATO never agreed to deploy these weapons, choosing instead to keep them stored in Italy.[79] In any case, by 1978, Turkey hosted nuclear warheads for the Honest John surface-to-surface rocket, B61 nuclear gravity bombs, and nuclear artillery shells.[80]

While the battle plan remains classified, in the event of war Turkish aircraft were expected to target Soviet oil resources in Romania, Azerbaijan, and the Caucasus. The Turkish forces were then expected to fall back gradually to the Hatay region, where they would then make a final stand in the Iskenderun area in southern Turkey, near the Syrian border. From there, Turkish forces would attempt to block a Soviet invasion of the Middle East and thereby allow the Alliance to maintain access to Middle Eastern oil fields, before American and British forces moved north from areas in the Levant, and met their Turkish counterparts somewhere in southwestern Turkey.

Based on this, it is not too far of a leap to think that Turkish aircraft, armed with U.S. nuclear weapons, could have been ordered to target installations in areas ranging from Baku to Moscow, and Hatay to Thrace. In addition, short-range nuclear artillery

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[79] "NATO Nuclear Planning," NARA, US Nuclear History, NH01023, Secret, Memorandum, January 10, 1967, published in the Digital National Security Archive; Drew Middleton, "NATO Approves Rules for Defensive use of Tactical Nuclear Weapons," *ibid*, December 4, 1969.

[80] History of the Custody and Deployment of Nuclear Weapons (U): July 1945-1977, Prepared by the Office of the Assistant to the Secretary of Defense, February 1978, available at, http://www.dod.mil/pubs/foi/operation_and_plans/NuclearChemicalBiologicalMatters/306.pdf

shells, would likely have been used to slow down and destroy Soviet/Warsaw Pact forces along invasion routes on Turkey's eastern and western borders.[81]

Findings

When faced with a HIGH threat, Turkey and Iran adopted different nuclear policies. Turkey viewed nuclear weapons as vital to its national security and incorporated them into its war-fighting plan. Iran, on the other hand, dismissed the role of nuclear weapons for territorial defense and chose instead to pursue conventional armaments. The reasons for the difference between Iran and Turkey's decision-making are twofold. First, Turkey's participation in NATO resulted in it hosting U.S. nuclear weapons. Iran, as a CENTO state, never received U.S. nuclear weapons. Nevertheless, they share an important characteristic: they were both included in the Zagros Line defense plan. As such, they both were both included in U.S. nuclear war planning, and therefore queried on their thoughts on nuclear weapons. Second, the two countries had divergent threat perceptions about the Soviet Union.

For Turkey, the threat was linked to territorial defense and, in particular, defending the Turkish straits and eastern/western Turkey from a Soviet invasion. Indeed, defense of the Zagros line was only one component of a much broader plan for the use of U.S. nuclear weapons stored in Turkey. Iran, on the other hand, dismissed the Zagros plan, choosing instead to lobby for a new war plan, predicated on the U.S. providing Iran with the most modern of conventional armaments.

[81] Melvyn P. Leffler, "Strategy, Diplomacy, and the Cold War: The United States, Turkey, and NATO, 1945-1952," *Journal of American History* vol. 71 (March, 1985), pp. 807-25.

Iran's decision-making was driven, in large part, by its fear about Pan-Arab nationalism, rather than the threat of Red Army invasion. To be sure, the Pan-Arabist threat was linked to the Soviet threat. The Arab nationalist states – Egypt, Iraq, and Syria – were all allied with the Soviet Union. Nevertheless, by 1967, the Shah had grown disillusioned with the intense U.S. focus on the Soviet Union, arguing that Nasser posed a more acute threat to Iranian interests.

This evidence suggests that the Soviet Union's conventional and nuclear superiority did not drive Iranian nuclear decision-making during Shah's reign. In contrast, Turkey's nuclear decision-making was driven by the Soviet threat. Ankara's approach to the role of nuclear weapons pre-dates its inclusion in NATO, but nevertheless the evidence suggests that once it became a member, Ankara's nuclear policy reflected that of the alliance.

Input 2: Doubts about Security Guarantees

Neo-realists contend that states seek out nuclear weapons after the country's leadership has lost faith in their super power protector. To test this hypothesis, this study examined whether Iranian and Turkish concerns about the U.S. security commitment changed their approach to nuclear weapons. During similar periods of time during the Cold War, both countries' questioned to the United States' commitment to abide by its security commitment to come to their defense if the conflict risked a greater confrontation with the Soviet Union.

To determine if these doubts affected Turkish and Iranian nuclear decision-making, this study measured how the two states reacted to disagreements about U.S. policy during the Indo-Pakistan War (1965) and Cyprus (1964 and 1974) – and what the

these decisions suggest about the key drivers of Iranian and Turkish nuclear decision-making. The data suggests that rather than seek out more military power – either through the acquisition of nuclear weapons or more advanced conventional arms – both Iran and Turkey pursued a strategy of détente/appeasement, albeit for different reasons related to their specific circumstances.

Iran: Embracing Détente

The Shah of Iran was never content with the level of support the United States provided to the Iranian armed forces. In as early as 1954, the Shah asked the United States for an explicit security guarantee. The United States refused, but in 1955, President Eisenhower personally reassured the Shah that the U.S. was ready to use force to protect Iran. As evidence, Eisenhower pointed to the U.S. led war in Korea to prove the American commitment to fighter communism abroad.[82]

The Shah lost faith in the United States' informal security guarantee in 1965, after the U.S. refused to provide fellow CENTO member Pakistan with a greater level of assistance during its conflict with non-allied India. The Indo-Pakistan war began after Islamabad launched a probing attack in the marshy Rann of Kutch (Gujarat). After some initial success, Pakistan sought to foment an uprising in Kashmir and use the opportunity to take the province back from India. These efforts, however, proved unsuccessful because Pakistan had overestimated local support for its Kashmir policy. The Indian military subsequently escalated the conflict in other areas outside of Kashmir and began

[82] "A. The Evolution of the U.S.-Iranian Relationship. B. A Survey of U.S.-Iranian Relations 1941-1979," January 29, 1980, Iran Revolution, IR03556, Digital National Security Archives, accessed November 12, 2013; "Suggestions for Allaying Iranian Hesitations over Joining the Baghdad Pact," September 17, 1955, Iran Revolution, IR00335, Digital National Security Archives, accessed November 12, 2013.

to target Pakistani defenses along the border. The Indian military eventually threatened Lahore, before international mediation ended the conflict, and restored the pre-conflict borders.

During the conflict, the United States imposed an arms embargo on both countries. India, however, was reliant upon British and Soviet weapons, whereas Pakistan was completely dependent on U.S. provided weaponry and ammunition. The arms embargo was therefore seen as negatively affecting Pakistan's ability to sustain armed conflict, rather than a policy that would equitably undermine both sides' ability to wage war. The Shah was dismayed at the United States' policy and chose to maintain close ties with Pakistan's General General Ayub Khan, who directed the ill-fated Pakistani offensive.[83] The Shah is reported to have provided General Ayub with weapons and diplomatic support during the conflict. He also argued that the United States' failure to support Pakistan would result in it further tightening ties with communist China, which would allow for further expansion of global communism along Iran's border. In parallel, the Shah was concerned that any Indian advantage over Pakistan would embolden the Baluchi separatist movement[84] – a collection of Sunni Muslim tribes that have used guerilla tactics to combat the Iranian state for decades.[85]

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[83] A.K. Pasha, "A Keynote Address," in *India and Iran in Contemporary Relations, eds.* R. Sidda Goud and Manisha Mookherjee (New Delhi: Allied Publishers Ltd., 2014), pp. 6-7.

[84] Roham Alvandi, *Nixon, Kissinger, and the Shah: The United States and Iran in the Cold War* (Oxford: Oxford University Press, 2014), p. 60.

[85] Zia Ur Rehman, "The Baluch Insurgency: linking Iran to Pakistan," Norwegian Peace Building Resource Center, May 2014, http://www.peacebuilding.no/var/ezflow_site/storage/original/application/31c68a20991b5a98b0dece4fd929c9c8.pdf

Based on this evidence, it is possible to draw conclusion about the Shah's subjective understanding of the U.S. actions vis-à-vis the 1965 Indo-Pakistan war, and how that relates to Shah perception of Iran's most pressing security concerns. The Shah's primary concern during the Cold War was not the Soviet Union per se, but rather the spread of Soviet allied nationalism in its near abroad. As explained above, these concerns prompted the Shah to turn down a U.S. offer to use nuclear weapons to defend the Zagros line in 1959; and instead prod the United States to focus more intently on the threat posed by Nasser's Pan-Arabism/Soviet allied nationalist movements. Similarly, with regards to Pakistan, the threat, according to the Shah, was that Indian military victories would allow for the expansion of communism, which would then exacerbate the Baluchi nationalist threat.

Based on this data, this study concluded that in this specific instance (i.e., the tangential threat posed by 1965 Indo-Pakistan war) Iran faced a LOW security threat. It faced neither a nuclear armed, nor a conventionally superior threat. Instead, the Shah was concerned about the threat posed by a nationalist insurgency. Thus, in reaction to his discomfort with viability of the U.S. security guarantee, the Shah chose to follow a two-pronged policy of pursuing a policy of greater independence from the United States, as well as détente with the Soviet Union.[86] In 1967, for example, the Shah concluded a $110 million arms agreement with the Soviet Union, and thereafter concluded numerous infrastructure related agreements, including the export of Iranian natural gas to Moscow.[87]

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[86] Alvandi, *Nixon, Kissinger, and the Shah,* pp. 3-5.
[87] Roham Alvandi, "The Shah's détente with Khrushchev: Iran's 1962 missile base pledge to the Soviet Union," *Cold War History*, vol. 14, no. 3 (July, 2014) pp. 423-444.

With regards to Iran's nuclear decision-making, shortly after the Shah's faith in the U.S. security commitment was tested, the government chose to forego nuclear weapons, and instead signed the Treaty on the Nonproliferation of Nuclear Weapons in 1968. The Parliament then ratified the NPT in 1970. By signing the Treaty, the Shah essentially disavowed the notion of nuclear proliferation, in favor of a policy of nonproliferation. As will be discussed in the following chapter on the role of norms in Iranian nuclear decision-making, the Shah was never completely comfortable with relying solely on the NPT, but his concerns were not about the Soviet Union's nuclear arsenal, but rather linked to his fear of Soviet allied Gulf Arab states acquiring nuclear weapons – both of which are related to his specific threat perceptions during his time as Iran's leader.

Turkey: Reaffirming the Value of Nuclear Weapons

In as early as 1947, Turkey eagerly sought out an explicit American security guarantee. After being rebuffed for close to four years, the United States changed its opinion about Turkey's role in NATO, and formally invited Ankara to join the Alliance in 1951. By doing so, the United States and its Western allies had formally pledged to come to Turkey's defense in the event of a Soviet attack.

NATO's Western European members, however, considered the Middle East to be "outside of the area" of the alliance's defense commitment. According to Turkish scholar Mustafa Kibaroglu, "in informal gatherings, leading European members of NATO have made it clear, time and again, that their loyalty to the Article 5 commitment (alliance solidarity) … would cover only these situations where Turkey had to be defended against

… the Soviet Union."[88] Consequently, for "out of area" issues, Turkey was more reliant on the United States for security cooperation, rather than the NATO alliance.

The first significant rupture in U.S.-Turkish security relations started in 1963, after the Cypriot government collapsed, and Greek nationalist forces began to threaten the island's sizeable Turkish minority. In response, Turkey brought the Cyprus issue to both NATO and CENTO and asked that both alliances step-in to guarantee the security of Cyprus' Turkish minority.[89] Fearing Soviet involvement in the Eastern Mediterranean, the United States and the United Kingdom supported the Greek supported position of *enosis,* which envisioned the unification of Greece and Cyprus, albeit with concessions to Turkey to protect the Turkish minority on the island.[90]

In response to Turkey's military build-up to support its Cyprus policy, President Lyndon Johnson sent a letter to Turkish Prime Minister Ismet Inonu chiding Turkey for contemplating the use of force on the island and warning that military intervention could lead to the direct involvement of the Soviet Union, which meant that Ankara had to consult with NATO before opting to use force. "I must tell you in all candor," Johnson wrote, "that the United States cannot agree to the use of any U.S. supplied equipment for a Turkish intervention in Cyprus under present circumstances."[91] Ankara thus decided to call off the invasion, but the incident has remained a sore point to date with many Turks viewing the letter as proof of Ankara's excessive dependence on Washington, on the one

[88] Mustafa Kibaroglu, "Isn't it Time to Say Farewell to Nukes in Turkey?," *European Security,* vol. 14, no. 4 (December, 2005), p. 444.
[89] Cihat Göktepe, "The Cyprus Crisis of 1967 and Its Effects on Turkey's Foreign Relations," *Middle Eastern Studies,* vol. 41, no. 3 (May, 2005), pp. 431-444.
[90] Ibid
[91] "Correspondence between President Johnson and Prime Minister Inonu, June 1964, as Released by the White House, January 15, 1966," *Middle East Journal*, vol. 20, no. 3 (Summer, 1966), pp. 386-393.

hand, and the administration's readiness to sacrifice vital Turkish interests for ulterior motives, on the other.

In response, the Turkish leadership did express some interest in rapprochement with the Soviet Union. Between 1964-1967, Turkey approached the Soviet Union to gain support for their Cyprus policy. First, in late 1964, representatives from the Turkish Foreign Ministry and a group of parliamentarians visited Moscow. Shortly thereafter, Turkish Prime Minister Ali Suat Hayri Urguplu became the first Turkish premier in thirty years to visit the Soviet Union. The Soviet Union reciprocated with a visit to Turkey in May 1965 and then again in 1967. During this same time period, Ankara sought to punish the United States for the Johnson letter by banning American U-2 flights from its territory.[92]

Turkey's outreach to the Soviet Union did not, however, alter its perception of the value of nuclear weapons – and in particular, Ankara's belief that nuclear weapons were needed to defend its territory from Soviet attack. For example, at a meeting of the Nuclear Planning Group in Ankara (in September 1967) Turkish Defense Minster Ahmet Topaloglu put forward a plan for the use of atomic demolition munitions (ADM) - otherwise known as nuclear mines - in the mountainous areas on Turkey's eastern border, claiming that the Turkish military felt it necessary to have control of the weapons and to detonate the munitions automatically in the face of an invasion of division strength. In his view, under the existing arrangement, the use of nuclear weapons would come too late to

[92] Yildiz Atasoy, *Turkey, Islamists and Democracy: Transition and Globalization in a Muslim State* (London: I.B. Tauris & Co., 2005), p. 132.

prevent Turkish forces from being overrun, while ADMs were purely defensive weapons aimed at signaling in a non-provocative way Ankara's intent to repel a Soviet invasion.[93]

The plan was finalized on January 15, 1968. It called for the forward deployment of seventy-two ADMs in Turkey. Ankara had hoped to pre-position twenty-nine weapons in the expected force area and ring its defensive position with another thirty low-yield ADMs. Ankara reasoned that the lower-yield weapons would help reduce the risk to Turkish troops operating in the area. The other thirteen weapons were to be held in reserve.[94] Mission planners had concluded that eastern Turkey was "ideally suited for ADM employment," but acknowledged the risk of fallout to civilians in the area, should an invasion come with little or no warning.

While U.S. Secretary of Defense Robert McNamara was reportedly amenable to the idea[95], Washington never deployed ADMs in Turkey or Greece (which made a similar request in 1968) instead choosing to keep them near the Italian town of Vicenza, where

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[93] "NATO Nuclear Planning Group, What Happened at Ankara," NARA, RG 59, Central Foreign Policy Files, Box 1597, DEF 12 NATO, Paris 4422, September 30, 1967, General Records of the Department of State, National Archives and Records Administration; Terence Smith, "NATO Unit Asks Plan for Deploying Atom Mines," *New York Times*, Sep 30, 1967; William Beecher, "Turkey Requests Leeway in using Atom Land Mines," *ibid*, Apr 6, 1967.

[94] "Proceedings of the Tactical Nuclear Weapons Symposium, Held at Los Alamos Scientific Laboratory of the University of California, Los Alamos, New Mexico, LA-4350-NM, Redacted Copy, held on 3-5 September 1969," NARA.

[95] The United States was concerned about the Turkish request, but then-Secretary of Defense Robert McNamara was happy that NATO ministers had "done their homework" and had not wasted time at the meeting with "long prepared speeches." McNamara had grown concerned that the allies lacked a coherent plan to use the 7,000 nuclear weapons deployed in Europe and that this eroded Alliance deterrence. Thus, at a NATO NPG meeting in Ankara in September 1967, he prodded the allies to come up with more "concrete operational plans for specific nuclear weapons in defined contingencies and geographical areas." See: "NATO Nuclear Planning Group, What Happened at Ankara," NARA, RG 59, Central Foreign Policy Files, Box 1597, DEF 12 NATO, Paris 4422, September 30, 1967, Department of State, Telegram, General Records of the Department of State, NARA.

they had been stored since 1956. Nor did NATO's revised political guidelines for the use of nuclear weapons (December 1969) include the forward deployment of ADMs in Turkey: only a pledge to hasten decision time on the use of nuclear weapons in appropriate geographical areas to prevent Soviet forces from overrunning local defenses.[96]

The situation in Cyprus changed again in 1973, after the mainland Greek military junta engineered a coup on the island to overthrow President Makarios III. For Turkey, the coup triggered a military invasion, ostensibly to protect the Turkish minority, but in reality to help achieve their political ambitions on the island. Having quickly overwhelmed the Greek forces, Ankara sought to use its military superiority to coerce Athens to make concessions.[97] After a series of ceasefires, Turkey established control over two-fifths of the island and in 1983 formally established the Turkish Republic of Northern Cyprus.[98]

In response to Turkey's invasion, the United States congress – over the objections of the Nixon Administration – imposed an arms embargo that lasted until 1978. Ankara retaliated by replacing U.S. commanders in NATO bases on its territory with local officers and making sweeping changes to the Status of Forces Agreement (SOFA) that

[96] Drew Middleton, "NATO Approves Rules for Defensive use of Tactical Nuclear Weapons," *ibid*, December 4, 1969.
[97] Indeed, during the crisis the U.S. took the precaution of removing its nuclear weapons from Turkish (and Greek) alert aircraft and stored them in their bunkers. See: U.S. Security Policy toward Turkey, Secret, Cover Memorandum, Presidential Directives, Part II, PR01315, August 16, 1975; Hans Kristensen, "U.S. Nuclear Weapons in Europe: A Review of Post-Cold War Policy, Force Levels, and War Planning," National Resources Defense Council, February 2005, http://www.nrdc.org/nuclear/euro/euro.pdf.
[98] Erik J. Zurcher, *Turkey: A Modern History* (London: Tauris, 2009), pp. 275-276.

governed American military operations on Turkish territory.[99] Ankara, however, made an exception for the nuclear weapons deployed in NATO facilities on its territory. Though these facilities were placed under Turkish control, Ankara took no steps to abrogate the bilateral nuclear basing agreement allowing for the deployment of nuclear weapons. In other words, while prepared to punish the U.S. for the embargo, Ankara was unwilling to threaten its nuclear weapon status.

Findings

The evidence supports the neo-realist contention that when an allied state grows concerned about the viability of an external security guarantee, it will take steps to address the perceived security threat. However, in sharp contrast to the neo-realist arguments posited about the reasons why states proliferate, neither Iran, nor Turkey took any steps to develop nuclear weapons after they grew concerned about the viability of the U.S. security guarantee. Instead, each state pursued divergent strategies, predicated on their own conceptions of the threat faced, as well as the best policy to address that threat.

The Shah, for example, embraced the notion of rapprochement with the Soviet Union, whereas Ankara was merely seeking to gain support for its position on the Cyprus issue. The Shah's outreach to the Soviet Union, according to Roham Alvandi, the author of *Nixon, Kissinger, and the Shah: The United States and Iran in the Cold War,* was part of a more comprehensive effort to gain independence from the United States. Thus, even while Iran faced a HIGH security threat vis-à-vis the Soviet Union, its perception of the Soviet threat differed considerably from Turkey's, as evidenced by the earlier differences

[99] "U.S. and Turkey Renew a Military Base Accord," *New York Times*, January 10, 1980; "U.S. and Turkey Sign Pact on Aid and Bases," *ibid*, March 30, 1980.

in opinion about nuclear weapons and the defense of the Zagros line. Thus, when faced with American inaction in Pakistan, the Shah linked the issue to the expansion of global communism, which in turn would exacerbate a LOW security threat: a domestic insurgency. For these reasons, the Shah had little incentive to proliferate, and instead explore other options to address his nuanced security concerns. This approach resulted in Iran's pursuit of rapprochement with the Soviet Union – a state that enjoyed both conventional and nuclear superiority over Iran.

Turkey, by contrast, continued to view the Soviet Union as its primary threat. Thus, while it was willing to take steps to punish the United States for its approach to the Cyprus issue, it never took any steps that would threaten its hosting of U.S. nuclear weapons. Turkey's decision-making supports the argument that presence of American nuclear tactical nuclear weapons on Turkish soil acted as a proliferation constraint: had Ankara sought to proliferate it likely would have risked losing its nuclear weapons status. This would have been a major setback given Turkey's continued NATO nuclear enthusiasm, as evidenced by its 1967 plan to use atomic munitions to blunt a Soviet attack.

The evidence therefore suggests that doubts about the U.S. security guarantee did affect Turkish and Iranian nuclear decision-making. However, it did not prompt either state to seek out nuclear weapons. Thus, when presented with the aforementioned options to address a security threat without seeking nuclear weapons, Turkey remained wedded to a policy of an alliance with a superpower, whereas Iran chose to blend two different strategies: détente with the Soviet Union and the maintenance – albeit at a distance – of the security relationship it had cultivated with the United States.

Input 3: Regional Proliferation

The political situations in both Iran and Turkey changed dramatically in 1979 and 1980. In Turkey, after a decade of political instability, General Kenan Evren toppled the civilian government with the purpose of re-establishing political order and re-writing the Turkish constitution. The change in Iran was far more dramatic. After more than three decades in power, widespread anti-Shah protests resulted in the Shah fleeing Tehran in January 1979; soon thereafter, the powerful Ayatollah Ruhollah Khomeini, who pulled many strings behind the revolution, returned home after decades of exile (first in Turkey, then Iraq, then in France) and quickly worked to sideline his Marxist and liberal revolutionary allies and to put in place the political infrastructure for his envisaged Islamic government.

Beginning in 1980, Turkey and Iran had to contend with a new threat: regional proliferation. While Israel, India, and Pakistan had already made the decision to proliferate by this time, none of these countries had an adversarial relationship with Iran or Turkey. The two countries did share concerns about Iraq's clandestine WMD programs. To determine how both countries responded to this input, this study first sought to discern whether or not Iraq was nuclear latent. Thereafter, this study determined the level of threat posed by the Iraqi WMD program and then charted the Turkish and Iranian responses to it based upon the calculated threat level.

Assessing the Threat: Iran and Turkey

The nonproliferation community remains divided about how close Iraq was to acquiring nuclear weapons. For the purposes of this study, the data about Iraq's program

was used to test whether or not Iraq was truly latent and, perhaps more importantly, whether Iran and Turkey felt threatened by Iraq's nuclear weapons program. During the 1980s, Iraq had a dedicated program to enrich uranium, first by using electromagnetic isotope separation (EMIS), before launching a dedicated program to produce gaseous centrifuges in 1987. In parallel, through out the Iran-Iraq war, Iraqi scientists conducted weapons specific tests related to the procurement of proper detonators and the infrastructure needed to support a weapons program. However, Iraq had not yet succeeded in developing an enrichment facility and it had no access to plutonium, only uranium (much of which France provided for a reactor). Based on the data, this study came to the following conclusion:

Measuring Nuclear Latency: The Iraqi Case	
Highly Enriched Uranium	
Infrastructure	No
Uranium mining	Acquired "Yellowcake" uranium from a foreign source in the 1970s
Milling	No
Conversion to UF6	Yes
Enrichment	No
Weapons Design Work (Hemisphere, Neutron initiator, Conventional explosives testing (shockwave generator, or gun type design)	Yes
Subjective Variables	
Leader Statements	Yes
Adversary Perception	Yes
Conclusion	
Iraq was not nuclear latent, but Iran felt threatened by Iraq's nuclear work.	

Despite Iraq's non-nuclear latent status, the regime had acquired chemical weapons – both blister and nerve agents – in the 1960s. As such, Iraq was WMD armed, even though it was not nuclear-latent. For comparative purposes, this study calculated the threat posed by Iraq to Iran and Turkey.

This study judged that Iran faced a HIGH threat during the 1980s. Iran had an adversarial relationship with a WMD armed neighbor, with which it was fighting a protracted military conflict. Turkey, on the other hand, was not directly threatened by the Iran-Iraq war and sought to take advantage of the conflict to benefit its economy by adopting a neutral policy towards the two combatants. Nevertheless, by 1985, Ankara had grown concerned about Iraq and Iran's acquisition and use of ballistic missiles and Iraq's WMD program. Moreover, the war exacerbated Turkey's problems with its own Kurdish minority, after the Iraqi army launched an offensive in the Kurdish majority areas, which then forced thousands of refugees to flee to Turkey. In parallel, the Kurdistan Workers' Party (PKK) took advantage of the security vacuum to establish strongholds in areas along the Turkish-Iraqi border; from which the group subsequently used to launch attacks on Turkish targets. Based on the indirect threat posed by both the presence of Iraqi WMD and the threat posed by the PKK, this study concluded that Turkey faced a MEDIUM threat. [100] Iran, in contrast, faced a HIGH threat owing to the fact that it was engaged in a shooting war with a WMD armed adversary.

Iran Responds: The Decision to Proliferate

After the Islamic Revolution, Iraq sought to take advantage of the political and military chaos inside Iran. The war began in September 1980 and unfolded in three phases. First, between 1980 and 1981, Iraqi forces successfully overran Iran's border defenses and occupied approximately 14,000 square kilometers of Iranian territory. Second, beginning in 1982, Iran was able to stop the Iraqi advance and eventually push

[100] For reference, Turkey faced a HIGH security threat throughout the Cold war, owing to its antagonistic relationship with the Soviet Union. Moreover, beyond the HIGH Iraqi threat, Iran faced a HIGH threat from the United States after the Islamic Revolution.

the Iraqi forces out of its territory. Third, by 1983, the Iranian offensive had stalled and bloody stalemate took hold.

Contrary to neo-realist assumptions, the Islamic Republic cancelled the Shah's nuclear program after taking power. By 1979, the Atomic Energy Organization of Iran had plans to acquire the infrastructure needed to enrich uranium and separate plutonium – and thus had the potential to use this infrastructure to support a weapons program. However, after assuming power, Ayatollah Khomeini initiated a review of all Shah era contracts and warned that those that "went against the interest of [the Iranian] people should be cancelled."[101] In June 1980, the Iranian leadership concluded that the nuclear program had ensued on the "basis of colonialist imposed treaties" that had increased Tehran's dependence on the Western powers."[102]

The Iranian leadership did so, despite its concerns about Iraq's nuclear program, and the threat it faced from a rapidly advancing Iraqi army between 1980-1982. Just eight days after the Iraqi invasion, for example, the Islamic Republic made an abortive attempt to destroy the Tuwaitha Nuclear Research Center near Baghdad, where with French assistance, two nuclear reactors were under construction.[103] The strike failed to destroy the reactor complex, but nevertheless demonstrates that Iranian officials were concerned about the potential for Iraq to use the facility to acquire weapons usable plutonium (the Israeli Air Force destroyed the complex in 1981.)

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[101] Paul Lewis, "Khomeini Demands Review of Iran's Foreign Deals: Ayatollah Will Visit Cemetery," *New York Times*, January 22, 1979, p. A11.
[102] David Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, pg. 98.
[103] National Intelligence Daily, Director of Central Intelligence, October 1, 1980, National Security Archives, http://nsarchive.files.wordpress.com/2012/03/iran-iraq1.pdf.

Though the Iranian strike indicates the Islamic Republic's wariness of Iraq's nuclear weapons ambitions, there is no evidence that Khomeini directed his subordinates to begin exploring a nuclear weapons option at that time. According to Ali Ashgar Soltaneih, a nuclear physicist who worked in various capacities for the Iranian foreign ministry (most recently as Tehran's ambassador to the International Atomic Energy Agency in Geneva), despite its discriminatory nature, even the Islamic Republic's leadership "did not decide to leave the NPT ... and this proves that there was no nuclear weapons policy ... Despite this policy, the more we cooperated, we noticed that we were deprived of minimum of support from the international community."[104]

The decision-making calculus for Iran changed in 1983, after the Iraqi forces first used chemical weapons (mustard gas) against Iranian troops during the Val Fajr II campaign near Haj Umran. The initial attacks, however, were ineffective, due to the use of the chemical agents in unfavorable wind conditions.[105] Nevertheless, by November 1983, Iraqi forces were regularly using chemical weapons against Iranian troops with increasing lethality. Later, in February 1984, the Iraqi army shelled and bombed Iranian forces that had occupied the Manjoon islands near Basra with chemical agents, including the nerve gas tabun, causing heavy casualties as Iranian troops that lacked protective gear and atropine injectors to defend against the strikes.[106]

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[104] Author interview with Ali Ashgar Soltaneih, Istanbul, November 3, 2013.
[105] Javed Ali, "Chemical Weapons and the Iran-Iraq War: A Case Study in Non-Compliance," *Nonproliferation Review,* vol. 8, no. 1 (Spring, 2001), pp. 47-49.
[106] Task Force V Lessons Learned: The Iran-Iraq War, Department of Defense, December 5, 1996, http://www.gulflink.osd.mil/declassdocs/af/19961205/120596_aaday_01.html; S. Taheri Shemirani, "The War of Cities," in Farhang Rajaee (ed.), *The Iran-Iraq War: The Politics of Aggression* (Gainesville: University of Florida Press, 1993), p. 33.

The evidence suggests that rather than seek out an effective defense or deterrent, Iraq sought to use these early attacks to help break free from its political isolation. For example, shortly after the first documented use of Iraqi WMD, Iran launched an aggressive propaganda campaign to raise international awareness of the Iraqi use of chemical weapons. The efforts included the printing of flyers in European capitals and sending wounded soldiers to European cities for examination. The general Western reaction, however, was one of indifference. While some political circles in Washington, notably the State Department[107], condemned the Iraqi use of chemical weapons, the West continued to support the Iraqi war effort.

The United States began to side with the Iraqi regime in 1982, after the Iranians seized the momentum during the war. Similarly, western chemical companies continued to sell precursors needed to manufacture chemical agents to the Iraqi regime, even after it become known that they were being diverted for weapons use. Nevertheless, in March 1982, Parliament Speaker Akbar Hashemi Rafsanjani, lauded Iran's restraint in the conflict and argued that for the time being "we are committed to not resort to chemical bombs" yet warned that he did not know "how long this will remain so."[108]

There are signs, however, that Iran was exploring its nuclear weapons related options. Reza Amrollahi, the director of Atomic Energy Organization of Iran (AEOI), wrote to the IAEA decrying Iraq's use of chemical weapons against Iranian forces and

[107] On March 5, 1984, Department of State spokeswoman Anita Stockman said, "In condemning Iraq's resort to chemical weapons, the U.S. also calls on the government of Iran to accept the good offices offered by a number of countries and international organizations to put an end to the bloodshed." Alex Efty, "Khomeini Calls for Iranian Victory; One Leader Questions Strategy," *Associated Press*, March 21, 1984.
[108] Hashemi-Rafsanjani Discusses Chemical Weapons," *Tehran Domestic Service*, Daily Report, South Asia, FBIS-SAS-84-059, March 26, 1984.

ominously comparing these weapons with nuclear weapons saying, "if nuclear warfare annihilates, maims, and in general devastates large sections of the population, advanced chemical warfare is designed to perform exactly the same function with equal brutality." Moreover, in an overt reference to Iraq's nuclear weapons program Amrollahi prodded the IAEA to consider "what may have occurred if the Iraqi regime had access to a nuclear device, however crude, and what safeguard rules or NPT provisions could have prevented the deployment of such device."[109]

In either late 1984 or early 1985, Iran reversed its previous approach and began to work on developing centrifuges. More robust efforts to secure the front end of the nuclear fuel cycle began in January 1986, when a high level Iranian delegation, comprising President Khamenei, Foreign Minister Ali Akbar Velayati, and Construction Jihad Minister Bijan Zangenh, met with Pakistani President Zia al-Haq to inquire about purchasing fuel cycle equipment.[110] Pakistan turned down Iran's request for centrifuge technology, but one year later, in 1987, Iranian officials began to meet with representative from the AQ Khan network – an illicit procurement network for centrifuge and nuclear weapons design information run by the Pakistani scientist, Abdul Qadeer Khan.[111]

During those meetings, Iran purchased technical schematics and centrifuge equipment for a centrifuge facility as well as a list of illicit suppliers in Europe, the

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[109] Letter Sent to the IAEA," *IRNA*, Daily Report, South Asia, FBIS-SAS-84-050, March 13, 1984.
[110] *Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of the Proliferation Networks* (London: International Institute for Strategic Studies, 2007), p. 66; "Khamenei submits report to Khomeini," *Tehran Domestic Service*, Daily Report, South Asia, FBIS-SAS-86-015, January 23, 1986.
[111] *Nuclear Black Markets,* p. 67.

Middle East, and East Asia. Iran also acquired a 15-page document "describing the procedures for the reduction of UF6 to uranium metal and the machining of enriched uranium metal into hemispheres, which are components of nuclear weapons"; and while Tehran claimed that it didn't ask for the document or information about casting hemispheres, the Khan network is not known to have ever provided any documents or services free of charge to any of its customers.[112]

Iran subsequently began work on the development of uranium enrichment and, beginning in 1999, is alleged to have conducted numerous weapons specific experiments. The Islamic Republic has subsequently been forced to document many of these clandestine activities to the IAEA, after its undeclared program was revealed in August 2002. Iran has admitted to starting an undeclared enrichment program in 1985, but has made very clear that the assertions that it conducted weapons specific experiments – known collectively as the "Alleged Studies" – are based on forged documents given to the IAEA in 2005 by a number of unnamed member states.

To make a determination about whether Iran made the decision to proliferate, this study relied on information published by the IAEA. With regards to the "Alleged Studies" documents, the Agency has concluded that the combination of the documents and the Agency's investigative efforts suggest that information about the weaponization work is "credible."[113] Iran, on the other hand, maintains that they are forgeries. For the

[112] *Ibid,* p. 68; Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran, International Atomic Energy Agency, Report by the Director General, GOV/2004/83, November 15, 2004, http://www.isisnucleariran.org/assets/pdf/iaea-iranreport- 111504.pdf.

[113] Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran, International Atomic Energy Agency,

purposes of this study, the IAEA's assertion that the evidence is "credible" suggests that the information provided can also be used to make a determinative judgment about Iranian nuclear intent and whether it has achieved nuclear latency.

To build a nuclear weapon, a proliferator needs thousands of parts. Los Alamos nuclear weapons laboratory has compiled a classified list of all of the parts needed – and where one can procure them – and it reportedly totals more than 500 pages.[114] Based on the evidence, Iran was working on an implosion driven fission device for delivery by ballistic missile. This information allows for the compilation of a list of materials/processes/experiments that Iran would have to master, before it could design an actual nuclear device. In turn, this study assumes that if a state conducts all of the tests needed to design a nuclear weapon and then pairs it with a dedicated effort to acquire fissile material that, indeed, the state in question has an interest in acquiring nuclear weapons. Thus, rather than build a timeline of when Iran made what nuclear decision, the chart below places that information within the context of weapons specific work.

Making the Bomb: The Case of Iran			
Material	**Purpose**	**Nuclear Decisions**	**Current Status**
Fissile Material	Core of a nuclear weapon	Iran began centrifuge work in 1985. UF6 was first introduced into Iranian centrifuges 1999. Work on the heavy water Arak reactor also began in 1985. The reactor project was accelerated in 1997	Enrichment on-going, as is construction at the heavy water reactor
Tamper	Traps neutrons in the core of the nuclear weapon after conventional explosive detonation.	No evidence of work on a tamper, although Iran has access to the materials used to construct it: Uranium 238	Weapons work was allegedly suspended in 2003, albeit with the key players from the program still working from the Mojdeh site near Malek Ashtar University

Report by the Director General, GOV/2011/65, November 8, 2011, http://www.isisnucleariran.org/assets/pdf/IAEA_Iran_8Nov2011.pdf.

[114] David Albright and Mark Hibbs, "Iraq and the Bomb: Were they Even Close?," *Bulletin of Atomic Scientists,* vol. 47, no. 2 (March, 1991), pp. 16-24; Iraqi Nuclear Weapons, Federation of American Scientists, updated May 2012, available at: http://www.fas.org/nuke/guide/iraq/nuke/program.htm.

High Explosives testing	Trigger a nuclear explosion	Shaped Charge and U265 shock implosion generator work began in 1996	Suspended in 2003
Fuzing System	Trigger the detonation of the conventional explosives at a specific altitude	Iran is alleged to have been working on a fuzing mechanism to detonate a warhead at an altitude of 600 meters	Suspended in 2003
Neutron Source	Initiates the chain reaction	Iran irradiated bismuth to create polonium-210 (Po-210), an intensely radioactive alpha-emitting radioisotope used in the weapon design Iran procured from the AQ Khan network	This work took place between 1989 and 1993
Conversion and hemisphere fabrication	Design of the fissile core	Iran received these instruction from AQ Khan in 1987	Unkown
Theoretical Calculations	Determine shock dynamics to model the detonation of conventional explosives	Iran is reported to have used commercially available software to assist with an alleged effort to design a compact warhead for delivery by missile	Unknown
Implosion Package Testing	Measures the detonation wave arrival at the inside of the explosives layer	Iran is reported to have conducted at least on test at either Parchin, or Marivan, a town close to the border of Iraqi Kurdistan, in 2003	No known tests after 2003
Nuclear Test	Test to ensure that the device works as intended	Iran has never conducted a nuclear test, but there are reports that it had dug a test shaft for an underground test	No test has ever been conducted

The aforementioned data suggests that in 1985, Iran made the decision to acquire the infrastructure needed to support a nuclear weapons program. Thereafter beginning in 1999, Iran began to conduct with weapons specific experiments, intended to support a dedicated nuclear weapons program. The delay in making the decision to proliferate – and actually undertaking weapons specific experiments – will be addressed in subsequent sections (Specifically, in the sections discussing the end of the bipolar order and in Chapter 5 on the role of individuals).

This study applied the same test to determine whether Iran ever achieved nuclear latent status. Iran currently has the capability to enrich 1 SQ of HEU in ~12 months. The program is under safeguards, but for simplicity, Iran is ~12 months from becoming nuclear latent.[115] This policy, according to the history, was first decided upon in

[115] As of November 2013, the time Iran needed to enrich to 1SQ had been as low as 2-3 months. The needed to enrich to 90% was extended after Iran and the EU-3+3 (The

1984/1985 and appears to have been driven – at least in part – on security concerns stemming from Iraq's use of WMD. Up until this point, the Islamic Republic had expressed little interest in nuclear weapons, choosing instead to abandon all but a few elements of the Shah's ambitious program to develop nuclear energy. Based on the evidence, the trigger for Iran's decision to proliferate was based, in part, on security concerns stemming from Iraq's use of WMD.

Turkish Apathy and Conventional Defense

Turkey's approach to the Iraqi threat differed considerably from that of Iran's. For Ankara, the threat posed by Iraq's possession of WMD was secondary to that of Soviet threat. Nevertheless, beginning in 1985, Ankara grew concerned about the growing use of ballistic missiles in the Iran-Iraq war. Turkey's concerns about the WMD threat grew more acute in 1988, after the Iraqi army used chemical weapons in the Kurdish majority city of Halabja. The city – which is inside Iraq – had fallen to an Iranian supported Kurdish guerilla force. Despite these concerns, Turkish policymakers sought to remain neutral during the conflict and remained an important conduit for Iranian and Iraqi energy exports through out the conflict.[116]

Turkey's perception of the WMD/ballistic missile threat changed in 1990. In response to the planned U.S. led military operation to force Iraq from Kuwait, Ankara

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United States, United Kingdom, France, Russia, China, and Germany) and Iran agreed to the Joint Plan of Action, which limits the number of Iranian centrifuges and stockpile of LEU. See: Joint Plan Of Action, European Union, European Union External Action, November 24, 2013, http://eeas.europa.eu/statements/docs/2013/131124_03_en.pdf; Eli Lake, "Obama Kept Iran's Short Breakout Time a Secret," *Bloomberg,* April 21, 2015, http://www.bloombergview.com/articles/2015-04-21/obama-kept-iran-s-short-breakout-time-a-secret.

[116] Elliot Hentov, "Asymmetry of Interest: Turkish-Iranian Relations since 1979", PhD thesis, Princeton University, 2011.

requested that NATO forward deploy aircraft to help protect major population centers from Iraqi reprisal attacks. The reason for the request was straightforward: During the run-up the start of first Gulf War, Turkish policymakers were concerned that Saddam Hussein would target Turkish population centers to punish the NATO ally for its support of the campaign. During this time, Turkish civilians were warned of the dangers of chemical weapons and nightly newscasts counseled civilians about what steps to take in the event of a chemical attack.

NATO, however, was initially reluctant to forward deploy aircraft at Incirlik Air Force base. This reluctance raised renewed concerns about the validity of the alliance security guarantee. The Turkish military also had difficulty dealing with the secondary challenges posed by the conflict; most notably, the military had difficulty moving the required number of troops to the border to protect against the influx of refugees.[117] Against this backdrop, the United States used an array of sophisticated weapons – most notably, precision guided bombs and the tomahawk cruise missiles – to devastate, and quickly defeat, one of the Arab world's best-equipped militaries.

Turkey subsequently sought to replicate U.S. military practice; this included a long-term plan to develop the offensive and defensive systems to target and destroy ballistic missiles and WMD infrastructure. Ankara's interest in missile defense and precision strike further increased in 1991, after Iraq's surrender to the U.S. led coalition revealed a well-hidden nuclear weapons infrastructure. Much to the surprise the international community, Iraq had managed to deceive IAEA inspectors and thus was

[117] Ian O. Lesser, *Bridge or Barrier: Turkey and the West After the Cold War* (Santa Monica, California: RAND Corporation, 1992), 30–32.

able to conduct numerous weapons specific experiments in facilities inspected regularly by the Agency. The full extent of Iraq's nuclear program, therefore, was not fully revealed until the passage of an intrusive inspection regime – UN Special Commission on Iraq (UNSCOM) – as a condition of its surrender to the U.S. led coalition in 1991.

After UNSCOM revealed Iraq's nuclear weapons program, Ankara supported international efforts to strengthen the IAEA's inspection protocol. In parallel, the Turkish military prioritized the development of missile defense, improved intelligence collection mechanisms, and long-range precision strike weapons. The goal of these plans was threefold. First, Turkey's support for improved IAEA inspections was a low cost and politically effective mechanism to ensure that another adversarial state could not replicate Iraqi practice and surreptitiously develop a nuclear weapon. Second, Turkey was eager to deepen the country's ability to target ballistic missiles before they are fired and to provide Turkish military planners with greater long-range conventional strike capabilities against a variety of targets. Third, Ankara is intent on producing these systems using coproduction arrangements with foreign suppliers, with the intended aim of bolstering Turkish independence, whilst also contributing to the further development of the economy.

These goals are complementary and intended to provide Turkey with greater assurances that a future proliferator will be detected – and if need be, provide Ankara with the capability to target WMD delivery systems/infrastructure in neighboring countries with conventional weapons. There is also a substantial economic component to Turkey's defense plans. Beginning in 1985, policymakers prioritized the further development of Turkey's private defense industry. The strategy is tied to a larger

government effort to increase research and development spending and to create high-tech Turkish products for export. Turkey has subsequently favored the production of these weapons systems through a system known as offsets, or coproduction arrangements. This approach has slowed its acquisition of advanced conventional arms. In the case of missile defense, this strategy has prevented the conclusion of a contract with any of the major suppliers for the sale of a system since the announcement of a tender in 1996.

Nevertheless, Turkey remains committed to this arrangement, even though it currently lacks the capabilities to defend itself from ballistic missile attack and instead has to rely on NATO. This suggests two things. First, Ankara remains committed to NATO, even after its faith in the alliance was tested by the slow delivery of military equipment in 1991. Second, Ankara has elevated economics over security concerns, even as it seeks to bolster its own conventional defenses against WMD attack. Turkey has paired its emphasis on building a conventional defense against ballistic missile attack with a policy of embracing nonproliferation as a core component of its national security strategy.

Findings

With regards to Iraq's WMD program, Iran faced a HIGH threat, whereas Turkey faced a MEDIUM threat. The difference in threat perception resulted in the two countries adopting different polices to address the same input – Iraqi proliferation. For Turkey, the lower level of threat appears to have allowed policymakers to elevate economic interests over that security interests. For Iran, the threat became intolerable in late 1983, after Saddam Hussein resorted to chemical weapons to stop of the Iranian advance. Up until

this point, the Islamic Republic's nuclear decision-making suggested a move away from latency/weaponization, rather than adopting it as a state policy.

By contrast, the threat to Turkey only fully materialized in 1990/1991, after the Iraqi invasion of Kuwait, and the subsequent U.S. led military resulted in the revelations about Iraq's WMD programs. Turkey's experience during this conflict resulted in two changes to its policy. First, Ankara sought to replicate U.S. tactics to help decrease its reliance on NATO – which was slow to respond to Ankara's request in the early days of the U.S. air war against Iraqi forces. Second, Ankara adopted nonproliferation as a key component of its defense against WMD proliferation. (This will be discussed in the following chapter on nuclear norms and decision-making in far greater detail.)

The evidence therefore suggests that in the case of Iran, a HIGH security threat is not enough to trigger a decision to proliferate. Otherwise, one would have expected Iran to take steps to proliferate to counter the Soviet threat during the Cold War, and immediately after the start of the Iran-Iraq war. Instead, the Islamic Republic did not make the decision to proliferate for close to 5 years after the Revolution, even though it was fighting a war with Iraq, and its decision in 1980 to bomb Tuwaitha makes clear that Iranian officials were wary of Iraq's nuclear program.

Turkey, on the other hand, responded to the Iraqi WMD threat differently than it did during the Cold War. Rather than rest solely on NATO and the concept of deterrence, Ankara began to pursue a conventional response, framed by a continued emphasis on economic advancement, to the WMD threat. This suggests that a HIGH security threat is not an automatic trigger to explore nuclear weapons, but rather the combination of a HIGH security threat and the use of WMD could be a potential trigger to seek out nuclear

weapons for defense in certain states. Furthermore, in response to a MEDIUM security threat, states may also seek out alternative defensive options to developing nuclear weapons/seeking nuclear latency; including the development of conventional precision strike.

Input 3: The End of Bipolarity

Neo-realists scholars have argued that after the collapse of the Soviet Union, the value of nuclear weapons would increase. Therefore, states that had chosen not to pursue an independent nuclear weapons capability – either because they had received a nuclear guarantee or were coerced into a policy of nonproliferation by one of the two superpowers – would seek to develop nuclear weapons, once the historic ethnic/political conflicts in Europe and the Middle East reemerged.

Both Turkey and Iran re-evaluated their approach to nuclear weapons after the end of the Cold War. In Iran, the leadership continued with its clandestine efforts to develop the front-end of the fuel cycle and, beginning in 1999, undertook a number of weapons specific experiments. Turkey, on the other hand, reversed its Cold War reliance on nuclear weapons for security; even taking the unique step to de-certify the pilots that Ankara had once relied upon to deliver U.S. nuclear weapons, should NATO have authorized the use of nuclear weapons. Turkey and Iran's different reactions to the same input suggest that the end of the Cold War did not increase the salience of nuclear weapons for either state.

Divergent Threats: Iran and Turkey in the Post-Soviet World

The two countries faced radically different threat levels after the Soviet Union collapsed in 1991 and the emergence of the United States and the world's most powerful

state. The Islamic Republic has, since its inception, had an antagonistic relationship with the United States. The United States has repeatedly threatened to use military force against Iran for decades, and has thus far refused to rule out the use of nuclear weapons in any potential conflict.[118] Based on this data, the Islamic Republic continued to face a HIGH threat after the end of the Cold War.

After the collapse of the Soviet Union, Turkey emerged as the region's strongest and best-equipped military. Access to arms slowed for Soviet patrons like Iraq and Syria, while Turkey was able to benefit from the transfer of Western European and American military surplus. In turn, the threat to Turkey shifted from the Soviet Union to the PKK led Kurdish nationalist insurgency. Based on these factors, Ankara faced a LOW security threat after the end of the Cold War.

Turkey: A Nuclear Nation without Delivery Vehicles

In 1991, Ankara began to devalue the role of nuclear weapons in their defense planning, along the lines proposed by the NATO alliance. Turkey's decision-making

[118] According to a 2011 RAND report, "In the 2010 U.S. Department of Defense *Nuclear Posture Review Report* (NPR), the United States announced a revision in its negative security assurance, presenting Iran with both a threat and an opportunity with respect to its nuclear program. The United States declared that it 'will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the NPT and in compliance with their nuclear non-proliferation obligations.' According to the NPR, 'This revised assurance is intended to underscore the security benefits of adhering to and fully complying with the NPT.' Because Iran is judged by the United States to be in violation of the NPT, the United States implicitly retained for itself the right to use its nuclear weapons against Iran. Iran's compliance with the NPT would remove this U.S. nuclear threat and thus provide a potential incentive for Iran to forgo developing nuclear weapons. The NPR elicited strong negative reactions from the Iranian leadership, which emphasized the threat posed by the United States rather than the incentive." See: Lynn E. Davis, Jeffrey Martini, Alireza Nader, Dalia Dassa Kaye, James T. Quinlivan, Paul Steinberg, "Iran's Nuclear Future: Critical U.S. Policy Choices," RAND Corporation, 2011, p. 21, http://www.rand.org/content/dam/rand/pubs/monographs/2011/RAND_MG1087.pdf.

between 1991 and 1995 suggests that Ankara was supportive of NATO's plan to de-emphasize the role of nuclear weapons. This suggests that, like during the Cold War, Turkey continued to be influenced by the Alliance's thinking about the role of nuclear weapons for the defense of Europe.

The first post-Cold War reduction of U.S. tactical nuclear weapons in Europe took place in 1991, after the United States pledged to remove all tactical ground launched and naval nuclear weapons from naval ships and bases outside the United States.[119] NATO followed suit by opting to decrease the total number of tactical nuclear weapons by another 50 percent, leaving 700 gravity bombs in Europe.[120]As part of these efforts, the U.S. removed nuclear weapons from Eskisehir air base, leaving nuclear weapons in three Turkish airbases: Akinci/Murted, Balikesir, and Incirlik.

Later, after a meeting in Italy, NATO's Nuclear Planning Group reached agreement "on sub-strategic nuclear force posture and stockpile level" and also concluded the alliance had no requirement "for ground-launched short-range ballistic missiles and artillery."[121] As a result, the nuclear artillery shells and warheads for battlefield artillery units were removed from Turkey. Ankara had relied upon these weapons for its defensive battle plans during the Cold War. Thus, the weapons' removal signaled a more profound shift in Turkey's threat perception vis-à-vis the threat of a Russian invasion.

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[119] Arms Control Association, "The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance," August 2012, available at: https://www.armscontrol.org/factsheets/pniglance#Note2.

[120] Final Communiqué, Chairman: Manfred Wörner, The North Atlantic Treaty Organization, October 17-18, 1991, available at: http://www.nato.int/docu/comm/49-95/c911018a.htm.

[121] *Ibid*

In 1995, the Base Realignments and Closures (BRAC) study recommended the consolidation of air force operations in Europe in four air bases in Europe: RAF Lakenheath in Britain, Ramstein airbase in Germany, Incirlik airbase in Turkey and Aviano airbase in Italy. In Turkey this resulted in the withdrawal of the 39th Munitions Support Squadron (MUNSS) from Balikesir airbase and the 739th MUNSS from Akinci airbase. The two teams completely withdrew from Turkey in April 1996 and the nuclear weapons stored at the base were transferred to Incirlik where they were still reserved for delivery by Turkish F-16s.[122]

Up until the weapons' removal from Akinci and Balikesir Turkey's fourth and sixth wings were responsible for delivering the weapons. After the consolidation of weapons in Incirlik, Ankara decreased the readiness level of its dual-capable F-16s. As of 2001, Turkey hosted 90 B61 nuclear gravity bombs, fifty of which are for delivery by U.S. aircraft from the 39th fighter wing. The other forty were reserved for delivery by Turkish F-16s from either the 4th or the 9th air wings currently stationed at Akinci and Balikesir.

Furthermore, in 2005, Turkish policymakers turned down an American offer to permanently station the fifty second fighter wing at Incirlik airbase. Instead, the fighter wing rotates in and out of Turkey, while the nuclear weapons are under the custody of the United States' 39th air wing. By 2010 the number of B61 gravity bombs in Turkey had dropped to 60-70, fifty of which were slated for delivery via American aircraft and the rest by Turkish F-16s. However, General Ergin Celasin, commander of the Turkish Air Force until 2001, is on record saying that "Turkey's role in NATO's nuclear contingency

[122] Author email interview with Hans Kristensen, February 6, 2014.

plans came to an end with the withdrawal of nuclear weapons in the 1990s from the Air Force units that were deployed in several air bases in Turkey."[123] The statement is puzzling.

According to Hans Kristensen, until Turkey receives the F-35, "approximately 30 [Turkish] F-16C/D Block 50s are scheduled to receive a 'stop-gap' upgrade to make them capable of carrying the new B61-12 bomb that will replace the B61-3/4 beginning in 2019."[124] Thus, it is widely assumed that Turkish aircraft have the capability to deliver nuclear weapons but its pilots are no longer certified to do so. In any case, Turkey has adopted a unique nuclear posture, whereby both the fifty-second U.S. fighter wing and either the fourth or sixth Turkish fighter wing would have to fly to Incirlik and be loaded with nuclear weapons before flying to their targets.[125]

Furthermore, in an indication of the political value Turkish leaders now assign to nuclear weapons, Ibrahim Kalin, President Erdogan's current spokesperson, and Suat Kiniklioglu, a former MP from the ruling Justice and Development Party (AKP) and former deputy chairman of its foreign affairs committee, made clear in 2009 that "Turkey would not insist that NATO retain forward-deployed nuclear weapons. Conventional

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[123] Telephone interview with General Ergin Celasin (ret.), February 15, 2010, Ankara, as cited in Mustafa Kibaroglu, "Turkey and Shared Responsibilities," in *Shared Responsibilities for Nuclear Disarmament: A Global Debate* (American Academy of Arts and Sciences, 2010), p. 27.

[124] Hans Kristensen, "Non-Strategic Nuclear Weapons," Federation of American Scientists, Special Report no. 3, May 2012, available at: http://www.fas.org/_docs/Non_Strategic_Nuclear_Weapons-lr.pdf

[125] In 1995 "the readiness posture of dual-capable aircraft was greatly reduced, so that nuclear readiness was measured in weeks rather than in minutes." In 2002 "the readiness requirements for these aircraft were further reduced and are now being measured in months." See NATO's Nuclear Forces in the New Security Environment, Background, the North Atlantic Treaty Organization, October 22, 2009, available at: http://www.nato.int/nato_static/assets/pdf/pdf_topics/20091022_Nuclear_Forces_in_the_New_Security_Environment-eng.pdf.

forces are sufficient."[126] These statements stand in stark contrast to Turkey's policy during the Cold War of near total reliance on nuclear weapons for security and reflective of the policy put in place in 1991.

Thus, rather than turning to nuclear weapons to augment their security, Ankara's decision-making suggests just the opposite. Beginning in 1991, Turkish decision makers took a number of steps to decrease the role of nuclear weapons for their security; even took the unprecedented step within the alliance to decertify the pilots that had hitherto been relied upon to deliver U.S. nuclear weapon on to their targets.

Iran: Independence and Nuclear Weapons

The Islamic Republic's approach to nuclear weapons changed in 1984. After reaching agreement with the AQ Khan network for the supply of enrichment design information, a list of European suppliers, and weapons specific design information, the Islamic Republic consolidated its weapons specific efforts. Iran's decision-making differed considerably from other AQ Khan clients. Libya, for example, purchased the design information and centrifuge components from Khan. Iran, for its part, purchased and then sought to independently develop the specialized components needed to operate centrifuges. This decision explains the long delay between the decisions to proliferate (in 1984); the introduction of UF6 into centrifuges (1999); and the start of weapons specific experiments (1999/2000).

[126] "Official: Ankara Doesn't Need NATO Nukes," Arms Control Wonk, December 8, 2009, http://lewis.armscontrolwonk.com/archive/2561/official-ankara-would-not-insist-on-nato-nukes.

The program began in an era of bipolarity, ostensibly to deter a Soviet allied client state (Iraq), and then continued after the Iraqi military was defeated in 1991; a time when relations with the United States became Iran's most pressing security concern. The data therefore suggests that the end of the Cold War had little affect on Iranian nuclear decision-making. Instead, the pursuit of a nuclear weapon appears to have been based on the belief that Iran needed to acquire a deterrent for defense. In October 1988, Rafsanjani argued for the need to develop weapons of mass destruction to prepare for a future struggle against any and all enemies of the Islamic Republic. Iran, he argued, must "fully equip [itself] both in an offensive and defensive use of chemical, bacteriological, and radiological weapons" because recent experience indicated to the Iranian leadership that "these weapons are decisive" and "that the moral teachings of the world are not very effective when war reaches a serious stage and the world does not respect its resolutions and closes its eyes to the violations and all the aggressions which are committed in the battlefield."[127]

After acquiring enrichment design information in 1987, Iran established what appears to be two separate centrifuge research and development programs. The first program supported Iran's civil nuclear research and was overseen by the AEOI. The second program was managed through the Physics Research Centre (PHRC), which was overseen by the Defense Industries Education Research Institute (ERI), established to coordinate defense R&D for the Ministry of Defense Armed Forces Logistics (MODAFL).[128] Iran's alleged military program initially relied upon Seyyed Abbas

[127] "Hashemi-Rafsanjani Speaks on Future of IRGC," *Tehran Domestic Service*, Daily Report, Near East & South Asia, FBIS-NES-88-195, October 6, 1988.
[128] GOV/2011/65, annex, p. 5.

Shahmoradi-Zavareh, an academic at Sharif University, to oversee the PHRC's procurement efforts.[129] Initial centrifuge research and development first began at Sharif, before elements of the program were moved to a compound in north Tehran in the Lavizan Shian neighborhood in 1989.

According to a series of telex requests sent by entities linked to the PHRC, Iran began to actively seek out the front end of the nuclear fuel cycle in 1988.[130] These efforts, however, proved unsuccessful, due to continued difficulties procuring specialized centrifuge components. Thus, after six years of work, Iran returned to the Khan network to arrange for the purchase of centrifuge components. In 1994, the Khan network began to send Tehran a duplicate set of drawings for the IR-1 centrifuge, along with components for 500 centrifuges, which Iran then used for centrifuge testing in the late-1990s, before researchers succeeded in introducing uranium gas into a centrifuge in 1999.[131]

The decision to pursue nuclear weapons specific tests appears to have coincided with the AEOI's advances in centrifuge development. For example, there is a notable absence of information about weapons specific experiments and procurement activities in 1993-98, and it was at this time when a PHRC linked fabrication facility, the Defense Industries Organization[132], was working on manufacturing specialized components. In late 1999, the PHRC was consumed by a larger entity, known as the AMAD plan, and

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[129] *Ibid.*
[130] David Albright, Paul Brannan, and Andrea Stricker, "The Physics Research Center and Iran's Parallel Military Nuclear Program," The Institute for Science and International Security, ISIS Report, February 23, 2012, http://isisonline.org/uploads/isisreports/documents/PHRC_report_23February2012.pdf.
[131] GOV/2004/83, p. 8.
[132] GOV/2007/58, p. 5.

placed under the direction of Mohsen Fakhrizadeh (Mahabadi). The program's focus subsequently moved away from procurement towards dedicated nuclear weapons experiments, including the development of a shock implosion generator[133], design work on the nosecone for a Shahab-3 missile to carry Iran's alleged warhead design[134], and the full scale test of the shock implosion system in 2003[135] using a substitute material to simulate HEU.

This weaponization work continued up until 2003, but was suspended after an Iranian dissident group, National Council of Resistance of Iran (NCRI), the civilian arm of the Mujahedin Khalq (MEK), a terrorist group that works to overthrow the Islamic Republic, revealed the existence of undeclared nuclear facilities in Iran, including the

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[133] David Albright, Paul Brannan, Mark Gorwitz, and Andrea Stricker, "ISIS Analysis of IAEA Iran Safeguards Report: Part II, Iran's Work and Foreign Assistance on a Multipoint Initiation System for a Nuclear Weapon," Institute for Science and International Security, ISIS Report, November 13, 2011, http://isisonline.org/uploads/isisreports/documents/Foreign_Assistance_Multipoint_Initiation_System_14Nov2011.pdf; Vyacheslav Danilenko and Olga A. Shenderova, "Advances in Synthesis of Nanodiamond Particles," in Olga Shenderova and Dieter Gruen (eds.), *Ultrananocrstyalline Diamond: Syntheses, Properties, and Applications of UNCD* (London: Elsevier, 2012; 2nd edit.), pp. 146-148; V. V. Danilenko, "On the History of the Discovery of Nanodiamond Synthesis," *Physics of the Solid State*, vol. 6, no. 4 (2004), pp. 595–599.

[134] In 2002 Fakhrizadeh was reported to have managed the start of Project 111 - the purported effort to design the triconic warhead variant's payload chamber to accommodate the R265 shock wave initiator. The project was alleged to be made up of six engineering groups, and in 2002-03 its staff was alleged to have conducted "at least 14 progressive design iterations of the payload chamber" to examine how the physics package would respond to the rigors of ballistic flight. See: Geoff Forden, "Iranian Warhead Evolution," *Arms Control Wonk*, June 9, 2010, http://forden.armscontrolwonk.com/archive/2763/iranian-warhead-evolution; GOV/2011/65, annex, p. 12.

[135] According to information provided to the IAEA, "the internal hemispherical curved surface of the high explosive charge was monitored using a large number of optical fiber cables, and the light output of the explosive upon detonation was recorded with a high speed streak camera." The Agency had "strong indications" that the "development of the high-speed diagnostic configuration used to monitor related experiments, were assisted by the work of a foreign expert [Danilenko]." See: *Ibid*

Natanz enrichment center, the address of the Kalaye electric company, a heavy water production plant under construction at Arak, and the names of various individuals and front companies involved with the nuclear program. In response, the Iranian leadership opted to halt the program, owing to concerns that Iran's nuclear activities would result in its file being referred to the United Nations Security Council.[136] After the issuance of the halt order, Iran destroyed the Lavizan-Shian site, going as far to remove layers of topsoil from the area and turning it into a municipal park.

Findings

The available data suggests that Iran's initial nuclear decision was made in reaction to the Iraqi use of WMD in 1984. However, by 1988, the statements indicate that the purpose of Iran's nuclear program had shifted towards acquiring an independent nuclear deterrent. The data therefore suggests that the end of the bipolar order was not a causal factor for Iranian nuclear decision-making. The program, therefore, continued after the end of the Iran-Iraq and Saddam Hussein's subsequent defeat during the Persian Gulf War. There does, however, appear to be a link to between the credibility of the use of force and the Iranian decision to halt the program in 2003.

Similarly, the end of the Cold War did not result in Turkey elevating the status of nuclear weapons for its defense/security. Instead, Turkey's actions suggest just the opposite; rather than seek out nuclear weapons, Turkey devalued the role of nuclear

[136] Text of speech by Supreme National Security Council Secretary Hassan Rouhani to the Supreme Cultural Revolution Council (place and date not given): "Beyond the Challenges Facing Iran and the IAEA Concerning the Nuclear Dossier," *Rahbord* (in Persian), FBIS IAP20060113336001, September 30, 2005, pp.7-38.

weapons for its security. Ankara's post-Cold War policy stands in stark contrast to its historic approach to nuclear weapons, which had always been premised on the belief that nuclear weapons were required to defend the country from a Soviet invasion.

Conclusion: Similar Inputs, Different Outputs

Turkey and Iran reacted differently to similar external inputs; thus disproving this dissertation's hypothesis that similar inputs should result in similar outputs. The two states also responded differently when faced with HIGH security threats. As such, beginning in 1959, the two states adopted divergent approaches to nuclear weapons. Iran disavowed the use of nuclear weapons for the defense of the Zagros line, whereas Turkey formulated a comprehensive plan to use nuclear weapons to defend its territory – including along the Zagros line.

The difference in outputs suggests that subjective factors influence nuclear specific decision-making. Thus, when presented with a similar input, the two states choose policies that the leadership believes is best suited to address the issue at hand. With regards to security threats, the Shah of Iran showed a consistent preference for maintaining cordial ties with the Soviet Union, whilst also seeking out greater conventional armaments from the United States. There is no evidence to suggest that a HIGH security threat prompted Iran to seek out nuclear weapons.

The Shah's policy, as well as personal statements on security related matters, indicates that he was not particularly concerned about nuclear weapons, but rather the regional threat posed by Pan-Arab nationalism. This perception, in turn, appears to have prompted him to focus more on defending against the Arab threat, rather than the Soviet threat. Consequently, Iran's handling of the HIGH security threat posed by the nuclear-

armed Soviet Union was similar to that of the policy to address a LOW security threat like the Baluchi rebels. This approach resulted in a relatively consistent nuclear policy that culminated in the decision to sign and then ratify the NPT, which thus indicated a political decision to forego the development of nuclear weapons.

The Islamic Republic, for the first five years, made similar decisions. When faced with a HIGH security threat, Ayatollah Khomenei made the decision to cancel the Shah's nuclear program. In addition, after reviewing Iran's treaty obligations, the Islamic Republic chose to abide by its NPT obligations. The trigger for Iran's nuclear weapons program appears to have been based on two interrelated factors: First, Iraq's use of WMD. Second, the failure of the international community to condemn and ultimately do something about Iraq's flagrant violation of international norms. The use of these weapons against Iran prompted Iran to explore its own nuclear options and resulted in a dedicated nuclear weapons program. The program began before the end of the Cold War and continued over a decade after the collapse of the Soviet Union. The history, therefore, suggests that the end of the bipolar order is a poor explanation for Iran's interest in nuclear weapons. Iran's decision-making also indicates that a HIGH security threat does not always lead to a state seeking out nuclear weapons – even when the state in question is involved in armed combat with a WMD armed adversary.

Turkey's approach to nuclear weapons is more reflective of neo-realist assertions about nuclear decision-making, albeit with important caveats. Ankara's nuclear decision-making was influenced by NATO's nuclear policy. Turkish policymakers, however, did seek to change NATO's nuclear wear plan in 1967, albeit with limited success. These efforts, however, are an indication of the way in which Turkey viewed nuclear weapons

during the Cold War. The weapons were not simply meant for deterrence, but Ankara viewed them as a vital component of its security – and if need be, wanted to use them to defend territory.

There is no evidence, however, that any combination of a HIGH security threat and doubts about the U.S. security guarantee ever prompted Turkish leaders to seek out an independent nuclear weapons capability. Ankara's decision-making during times of crises with the United States suggests that Turkey would stop short of threatening its nuclear status, even while it sought to retaliate against the United States. Turkey's actions suggest that NATO's nuclear guarantee may have acted as a proliferation constraint. After the end of the Cold War, Turkey's nuclear posture reflected NATO's de-emphasis on nuclear weapons. Ankara, however, is the only NATO country that hosts U.S. nuclear weapons that has made the decision to de-certify the pilots needed to deliver those weapons. Turkey is therefore unique in its approach to nuclear weapons. Turkey's posture is likely a result of its decreased threat perceptions vis-à-vis a superior adversary. It is also reflective of its post-1991 emphasis on conventional, rather than nuclear, defense.

More broadly, the data suggests that each country considered a myriad of factors when making nuclear decisions. This requires a more thorough explanation of other factors influencing policy-decisions. The following chapters discuss the role of proliferation restraints in nuclear decision-making to determine how the interplay between these factors shaped outcomes.

Chapter 4: Nonproliferation Norms and Nuclear Restraint: Iran and Turkey

Realist and neo-realist scholarship has struggled to explain cases of nuclear restraint. At the time of writing, there are some fifty nuclear weapons capable states, but only ten nuclear-armed states.[137] The large gap has remained static for decades and has thus challenged the security-oriented explanations for nuclear decision-making. In other words, states have not historically sought out nuclear weapons to address a security threat, but have instead steadily adopted nonproliferation as a key component of their national security strategy.

By contrast, a consensus has emerged in the field of nonproliferation that proliferation is historically rare and that an overwhelming number of states choose not to develop nuclear weapons.[138] To explain this phenomena of nuclear restraint, scholars have put forward variations explanations that are based on one of the four dominant theoretical narratives in proliferation studies: realism; neoliberal institutionalism; liberalism; and constructivism.

This study tests these theories, using the two cases of Iran and Turkey to explain the reasons for Iran and Turkey's nuclear restraint. To do so, this study will measure Iran and Turkey's reactions to a set of common inputs. These inputs include:

Nuclear Restraints
1- Treaties/Nonproliferation Agreements
2- Trade/Internationalizing Political Model
3- Humanitarian/International Acceptance

[137] Scott Sagan, "Nuclear Latency and Nuclear Proliferation," in *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory, Volume I,* eds. William Potter and Gaukhar Mukhatzhanova (Stanford: Stanford University Press, 2010), p. 86.
[138] Jacques C. Hymans, "The Study of Nuclear Proliferation and Nonproliferation," in *Ibid,* p. 33.

However, as the previous chapter noted, Iran – for security related reasons – chose to proliferate in 1984/1985. As such, this study will disaggregate the Iranian decision-making process, in order to discern whether or not there were other causal factors that influenced nuclear decision-making in Iran specifically.

The first section will chart Iran and Turkey's differing approach to nonproliferation norms and treaties; the second will document how Iran and Turkey's different economic models shaped nuclear decision-making; and the third will chart whether Iran or Turkey have ever embraced the notion of a "nuclear taboo" against the use of nuclear weapons. This approach allows for further testing of the central hypothesis and the measuring of Iran and Turkey's policy responses to the imposition of nonproliferation.

Input 1: Nonproliferation Norms and Treaties

When Iran and Turkey first decided to pursue nuclear energy, the decisions were driven by the American willingness to export nuclear technology to allied states. The United States' Atoms for Peace program was intended to assist with the development of peaceful nuclear energy programs in allied countries. The program's intent was threefold: First, during the 1950s, nuclear energy was lauded as a critical technology for the world's future. The United States conceptualized of a nuclear energy powered future, wherein the world could benefit from a plentiful and cheap energy source for economic development. Second, at the time the program was announced, the United States had the world's most developed nuclear sector and thus recently founded nuclear energy firms were eager to expand global market share. Third, the United States had enriched a significant quantity

of uranium for its weapons program, whereas the Soviet Union's weapons program still faced HEU shortages. Thus, as part of a broader effort to make permanent the then weapons gap between the two countries, the United States proposed a common nuclear fuel bank with the intention of depleting the Soviet Union's access to enriched uranium.

President Dwight D. Eisenhower announced this program to the United Nations in 1953.[139] The program provided a subsidy to the recipient nation to purchase a small research reactor. The United States agreed to provide the fuel for this reactor, in exchange for an inspection regime outlined in a bilateral nuclear cooperation agreement. The inspections were left to the United States' Atomic Energy Commission (AEC). Turkey and Iran both took advantage of the American policy, with Ankara concluding an agreement in 1955 and Tehran in 1957.

In both cases, the bilateral nuclear cooperation agreement was limited to the exchange of information regarding the design, construction and operation of research reactors and their use as research, development, and engineering tools and in medical therapy; the health and safety problems related to the operation and use of research reactor; the use of radioactive isotopes in physical and biological research, medical therapy, agriculture, and industry. Furthermore, the agreements included a peaceful use clause and required that the AEC have the right "to observe from time to time the condition and use of any leased material and to observe the performance of the reactor in which the material is used."[140]

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[139] Dwight D. Eisenhower, "Atoms for Peace," Dwight D. Eisenhower Presidential Library, http://www.eisenhower.archives.gov/research/online_documents/atoms_for_peace.html.

[140] Agreement for Cooperation Concerning Civil Uses of Atomic Energy Between the Government of the United States of America and the Government of the Turkish

Faced with few constraints, both Iran and Turkey signed the agreements without making any changes to the U.S. drafted cooperation agreement text. In fact, both Iran and Turkey made similar decisions between 1955-1968. Both countries worked closely with AEC officials; contracted with American Machine and Foundry for their first reactor; and worked closely with U.S. national labs whilst establishing the countries' first nuclear research centers.[141] Over time, however, the two countries adopted different approaches to nonproliferation norms.

Turkey, for example, resisted concluding a safeguards agreement with the IAEA and chose not to sign and ratify the NPT until the late 1970s. Iran, by contrast, signed the NPT immediately, ratified it shortly thereafter, and concluded a safeguards agreement with the IAEA in 1974. This dynamic changed after both the Islamic Revolution and the end of the Cold War. Iran resisted signing new nonproliferation agreements, whereas Turkey changed course, and signed every new nonproliferation agreement shortly after they opened for signature.

Safeguards, the IAEA, and the Treaty on the Nonproliferation of Nuclear Weapons

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Republic, signed on June 10, 1955; The United States of America and Iran, Agreement Concerning the Civil Uses of Atomic Energy, signed on March 5, 1957.

[141] Brookhaven was instrumental in helping to establish Turkey's first nuclear research center, Kucukcekmece. See: "Report on the Cekmecek Nuclear Research Center, Airgram, Department of State, July 21, 1965, General Records of the Department of State, Central Foreign Policy Files, 1964-1966, RG 59, Box 3071. Similarly, Manoucher Eqbal, who oversaw the establishment of the Tehran University Nuclear Research Center approached the Ford and Rockefeller foundation in 1956, with a "nuclear wish list of items" that he wanted to procure for the proposed research center. See: Incoming Telegram, Department of State, File no. 611.8897/6-156, June 2, 1956, General Records of the Department of State, National Archives and Records Administration, RG 59, Box 2558

Neither Turkey, nor Iran took a definitive position on the formation of the International Atomic Energy Agency in 1957. At that time, the international community had yet to conclude negotiations for the NPT; thus leaving the Agency with a limited mandate related primarily to nuclear cooperation and the administering of safeguards largely limited to verifying the design information of small research reactors.[142]

As was customary during the 1950s, the United States concluded separate bilateral safeguards arrangements with Iran and Turkey. These arrangements were governed by the terms included in the nuclear cooperation agreement, and therefore were subject to renewal every 10 years. To support the IAEA's mandate, the United States, beginning the early 1960s, sought to transfer its bilateral safeguards obligations to the IAEA. Turkey signed its nuclear cooperation agreement came into force 1955 and was thus asked to accept IAEA safeguards in 1965. Iran's nuclear cooperation agreement, however, only came into force in February 1959, which meant that it came up for renewal at the same that the NPT was opened for signature.

Turkey

Upon the expiration of the 1955 agreement, the United States presented an updated nuclear cooperation agreement that emphasized the need to transfer the

[142] According to the International Atomic Energy Agency, "From 1965 to 1967 the IAEA was able to reach agreement on the first comprehensive set of safe-guards covering reactors of all sizes and, subsequently, reprocessing plants and fuel fabrication plants … The safeguards are set forth in IAEA/INFCIRC/66 (reactors of all sizes), INFCIRC/66/Rev. 1 (adding reprocessing plants) and INFCIRC/66/Rev. 2 (adding fuel fabrication plants). The system did not extend to enrichment plants since none was yet in operation or projected in any non-nuclear-weapon State." See: "The Evolution of Safeguards," The International Atomic Energy Agency, November 1998, https://www.jaea.go.jp/04/iscn/iscn_old/resource/Evolution%20of%20Safeguards%201998.pdf.

responsibility for the administration of safeguards from the AEC to the IAEA.[143] The United States presented the revised text to its Turkish counterparts in March 1965, which thus left Turkish policymakers with only 3.5 months to review and accept the new arrangement. Upon receiving the document, the Turkish Atomic Energy Commission (TAEC) informed the U.S. ambassador to Ankara that it would be impossible for the government to reach an agreement before April 30 - the date when Washington had hoped to receive a sign-off from Ankara so as to present the agreement to Congress within the mandatory 30 days before coming into effect. TAEC indicated that the agreement needed the sign-off from the Turkey's Council of Ministers - a group of prime ministerial appointees picked from the ranks of the Grand National Assembly and the president's approval. The reason for the delay, however, was that at the time all relevant MPs were out campaigning.

Ankara also expressed reservations about the imposition of IAEA safeguards, driving the U.S. embassy to inform Secretary of State Dean Rusk that Turkey would likely opt to retain a bilateral safeguards arrangement with the AEC for the following reasons: "1) Present arrangement completely satisfactory and allows for constant liaison with U.S. AEC experts; 2) Fear IAEA inspectors might, on occasion, be from Commie countries; 3) Turks might have to pay expenses of the IAEA inspection."[144] Beyond and above these reasons, Ankara feared losing contact with the AEC, which, at that time, was involved in prospecting for uranium, providing grants for students to study at U.S.

[143] "Peaceful Uses Atomic Energy Agreement," Outgoing Telegram, Department of State, Project number: NND 959900, March 16, 1965, General Records of the Department of State, Central Foreign Policy Files, 1964-1966, RG 59, Box 3071.
[144] "Atomic Energy Agreement," Incoming Telegram, Department of State, March 24, 1965, General Records of the Department of State, Central Foreign Policy Files, 1964-1966, RG 59, Box 3071.

laboratories, and, in the case of the Kucukcekmece nuclear facility, effectively running the plant with assistance provided by a lab-to-lab nuclear cooperation agreement with Brookhaven.[145]

Washington, however, remained adamant on Turkey's acceptance of IAEA safeguards. The Ankara embassy was instructed to emphasize that the issue of the safeguards transfer was "a non-negotiable pre-condition" for an amendment or extension of cooperation agreements. Yet by way of assuaging Turkish apprehensions the embassy was also authorized to assure the government that AEC-Turkish nuclear cooperation would not be affected, that Turkey could consult with the IAEA about the nationality of the inspectors visiting its sites, and that the IAEA would fund the cost of inspections.[146] To hasten the agreement's implementation, the embassy approached Sukru Elekdag, Director General of the NATO Department in the Ministry of Foreign Affairs, who proposed extending the agreement for one year in order to give Ankara the necessary time to pass the updated agreement.[147]

Washington was prepared to accept the proposal on condition that Ankara agreed to a clause in the agreement mandating the acceptance of IAEA safeguards within a year and noncompliance would result in the return of all safeguarded fissile material to the United States.[148] Should Ankara fail to agree to the trilateral safeguards arrangement, Washington would not renew the nuclear cooperation agreement. On April 23 Elekdag

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[145] "Report on the Cekmecek Nuclear Research Center, Airgram, Department of State, July 21, 1965, *ibid.*
[146] "Atomic Energy Agreement," Outgoing Telegram, Department of States, March 26, 1965, General Records of the Department of State, Central Foreign Policy Files, 1964-1966, RG 59, Box 3071.
[147] Incoming Telegram, Department of State, April 2, 1965, *ibid.*
[148] Incoming Telegram, Department of State, April 2, 1965, *ibid.*

confirmed that the U.S. drafted language was "completely acceptable"[149] and six days later indicated that the prime minister and the Council of Ministers accepted the revised version but would require another week to have it signed. The agreement eventually came into force on June 8, 1965 - one day before its scheduled expiry.[150]

In February 1966 the Turkish embassy in Washington informed the Department of State of Ankara's acquiescence in the IAEA assuming safeguards responsibilities.[151] The next month the administration sent the Turkish government an updated draft, and in early April W.L. Yeomans, Assistant Director of the Division of International Affairs at the AEC, arrived in Ankara to finalize the negotiations.[152] On April 9 the Turkish negotiators accepted the revised text apart from the provision pertaining to IAEA safeguards. Elekdag warned that the inclusion of the cancellation feature would be misconstrued in parliament as a tool for pressuring Turkey and could adversely affect U.S.-Turkish relations in other, more important, spheres.

He therefore suggested that the cancellation clause be included in a separate letter. The U.S. embassy, while deeming these concerns to be "overstated," noted that Ankara

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[149] Incoming Telegram, Department of State, April 24, 1965, General Records of the Department of State, Central Foreign Policy Files, 1964-1966, RG 59, Box 3071. There were some minor revisions to Article I of the agreement, which read: "The Government of Turkey undertakes to initiate such trilateral negotiations promptly and to furnish its decision to the Government of the United States of America not later than January 31, 1966 on whether the Government of Turkey finds the negotiated arrangements for safeguards to be acceptable." See: Outgoing Telegram, Department of State, April 22, 1965, *ibid.*

[150] "Exchange of Notes at Washington on July 8, 1965 with the Turkish Embassy Relating to the entry into force of the amendment to the agreement for cooperation concerning civil uses of atomic energy," Office Memorandum, United States Government, 14 July 1965, *ibid.*

[151] Turkish Embassy, Washington, DC, No. 275.900/165-6, February 2, 1966, *ibid.*

[152] Outgoing Telegram, Department of State, April 4, 1966 and Incoming Telegram, Department of State, April 7, 1966, *ibid.*

had a penchant for rejecting language insinuating U.S. leverage over it affairs.[153] Yeomans thus rewrote the problematic Article along the proposed lines, and on April 12 the Turkish government accepted the revised language.[154] Yet, just like in 1965, Ankara failed to sign the document due to the difficulties in getting all members of the Council of Ministers together. This prompted President Celal Gursen to instruct his Washington ambassador (on May 6, 1966) to sign the agreement.[155]

However, as a non-signatory to the NPT, Turkey was not treaty bound to conclude a comprehensive safeguards agreement (INFCIRC/153), as opposed to a facility specific arrangement (INFIRC/66) with the IAEA. Ankara's approach to the safeguards issue appears to have been linked to its concerns about signing the NPT. Like with the IAEA, Turkey supported international efforts to limit the spread of nuclear weapons. However, in 1959, Ankara had concluded a specific arrangement with the United States to host U.S. tactical nuclear weapons. Thereafter, Ankara put forward a plan to gain "pre-delegated control" over these weapons to help defend Anatolia and Thrace from a Soviet/Warsaw Pact invasion. Turkey' security concerns, in turn, dictated its early approach to nonproliferation.

In 1967, the United States sought out Turkey's opinion on the NPT draft text. Ankara expressed support for nonproliferation; however, Ankara was concerned about whether the treaty would limit nuclear security guarantees – and therefore Ankara's ability to use nuclear weapons to blunt a Soviet attack. Turkey therefore maintained that

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[153] Incoming Telegram, Department of State, April 9, 1966, General Records of the Department of State, Central Foreign Policy Files, 1964-1966, RG 59, Box 3071.
[154] Outgoing Telegram, Department of State, April 11, 1966 & Incoming Telegram, Department of State, April 12, 1966, *ibid.*
[155] Incoming Telegram, Department of State, May 7, 1966, *ibid.*

all NATO members needed to be in agreement regarding the interpretation of all its provisions before completely supporting the Treaty.[156] Ankara's concerns about pre-delegation ultimately appear to have resulted in the leadership deciding to forego signing the Treaty until 1977. Turkey changed its approach only after Ankara expressed an interest in working with European states on the construction of a nuclear energy center, which was presumably linked to the 1974 decision to pursue nuclear energy.[157] (Turkey's civilian nuclear program will be discussed at length below.)

Iran

The Iranian leadership approached these inputs differently. First, by virtue of its nuclear cooperation agreement coming into force at a later date, Iran's original cooperation with the United States did not expire until 1969. Upon the agreements' expiration, Iran had already signed the NPT; thereafter, Iran concluded a safeguards agreement with the IAEA in 1974.

The Shah succinctly summarized his approach to nonproliferation during a private conversation with Dr. Akbar Etemad, the director of the Atomic Energy Organization of Iran. In his book *Nuclear Iran: The Birth of an Atomic State,* David Patrikarakos quotes Etemad, who said that after meeting with the Shah on a weekly basis for close to six

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[156] "Status report on the views of various countries consulted about the proposed nonproliferation treaty. These countries include: Belgium; Canada; Denmark; West Germany; France; Greece; Iceland; Italy; Japan; Luxembourg; the Netherlands; Norway; Portugal; Turkey; the United Kingdom," Memorandum, Department of State, Secret, February 12, 1967. Date declassified: April 14, 1999, *Declassified Documents Reference System* (Farmington Hills, MI: Gale, 2014).

[157] "National Security Adviser Zbigniew Brzezinski is provided with the following information: Greek President Konstantinos Tsatsos' opinion that the government of Turkey is not yet ready to negotiate a Cyprus peace settlement with Greece; Turkey's position toward the nuclear nonproliferation treaty (NPT)," Memorandum, White House, Top Secret, December 9, 1977. Date declassified: February 01, 2005, *Declassified Documents Reference System* (Farmington Hills, MI: Gale, 2014).

months, he asked the monarch whether he wanted nuclear weapons. The Shah, after explaining his military plans for the region, told Etemad that Iran had no need for nuclear weapons.[158] He then repeated his frequent public assertion that he could change his mind if other nations in the region proliferated. Etemad, however, seemed to take this thinly veiled hint seriously, and by way of preparing for a potential policy shift encouraged research into all aspects of the fuel cycle and other areas that had weapons applicability.[159]

The anecdote suggests that Iran would refrain from developing a nuclear weapons – and thereby uphold its NPT obligation – but would also develop the back end of the nuclear fuel cycle, whilst also keeping its option open regarding enrichment. Iran's subsequent nuclear decision-making, however, suggests that the government had yet to settle on an actual policy of pursuing nuclear latency, and instead was investing in all elements of nuclear energy related infrastructure, [160] without an actual plan.[161]

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[158] In other settings, the Shah repeatedly framed his response to proliferation concerns in the form of a question, saying, "What do people want with nuclear weapons?" before adding that Iran would "never be able to achieve [nuclear] parity with the big powers." Thus, for Iran, the idea of pursuing nuclear weapons was illogical. However, he then inserted a caveat, whereby he left the nuclear option open, should smaller countries in the region proliferate and thereby erode Iran's conventional military superiority. See: "Shah Interview on Oil, Economic Aid, and Nuclear Arms," *Le Monde*, FBIS, Daily Report, Middle East and Africa, June 27, 1974, p. R1

[159] David Patrikarakos, *Nuclear Iran: The Birth of an Atomic State* (London: Tauris, 2012), pp. 62-68.

[160] Mehdi Sarram, former director of Nuclear Safeguards and Training at the Atomic Energy Organization of Iran, offers a more sanguine interpretation of the program's direction. In his view, Etemad thought that "Nuclear [technology] had no limit," which meant that Tehran should engage in all aspects of nuclear research to develop expertise. For Sarram, the real indicator of Tehran's nuclear weapons intent was the AEOI's selection of light-water-reactors. Had Iran wanted to develop a plutonium cycle for weapons, he argues, it would have opted for technology that was better suited for the task. This means that the main thrust of the AEOI's work was the development of nuclear energy through the purchase of power reactors. Nevertheless, he notes that the AEOI was

The concern about Iran's nuclear intent stemmed from its emphasis on the back-end of the fuel cycle and the AEOI's emphasis on two interrelated issues: First, during negotiations with the United States for an updated nuclear cooperation agreement, Iran refused to accept any limits on reprocessing; Second, Iran had plans to construct a large hot lab facility at Isfahan Nuclear Research Center. This facility would have allowed Iran to separate plutonium from nuclear fuel elements.[162]

Iran's policies during this time indicate that the Shah and the AEOI leadership believed that its NPT status meant that it should face no restriction on its acquisition of nuclear fuel cycle related technology. Consequently, Iran's concerns about

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involved in almost every area of nuclear research to help satisfy the Shah's desire to be conversant in all areas of nuclear research. Source: Author phone interview with Mehdi Sarram, December 17, 2013.

[161] During the 1970s, the AEOI considered developing an enrichment facility, but abandoned the idea after deeming the project to be infeasible. Etemad and the Shah had concluded that their investment in Eurodif – and perhaps in a planned American enrichment facility in Ohio – would satisfy Iranian demand. However, the AEOI was watching the development of gas centrifuge and jet nozzle technology closely. Moreover, on 11 February 1976, Dr. Jeff Eerkens, an American expert on laser enrichment technology, wrote to the Shah directly with an offer to help Iran set-up a laser enrichment facility in Iran. Just two weeks later, Dr. Mojtaba Taherzadeh, the director of the TNRC, responded to the letter and expressed interest in cooperating with Eerkens. Like Eerkens, Taherzadeh worked in the U.S. defense industry and on the SNAP project to develop power sources for space satellites. Eerkens visited Tehran in 1976, where he met with Etemad, and Ehsanollah Ziai. During his visit, Eerkens and Ziai concluded an agreement for the AEOI to finance research into ISOSEP laser enrichment technology, which was based on Eerkens' theoretical work and patented in the United States in December 1975. See: Anton Khlopkov, "How the United States Helped Iran Build a Laser Enrichment Facility," *Nonproliferation Review,* vol. 20, no. 1 (March, 2013), pp. 39-40.

[162] "Le Monde Interviews Iranian Nuclear Energy Official," *Le Monde*, in Daily Report, Middle East and Africa, FBIS-MEA-75-241, December 15, 1975, p. R1; U.S. Embassy in Tehran to State Department, "US-Iran Nuclear Cooperation Agreement and US-Iran Energy Discussions," May 16, 1977, Confidential, available at: http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc28.pdf; U.S. Embassy in Tehran to State Department, "GOI/AEOI Plans for Isfahan Nuclear Technology Center, ENTEC," February 14, 1977, Secret, available at: http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc25b.pdf.

nonproliferation norms were not about the NPT per se, but rather efforts undertaken after the 1974 Indian nuclear test to augment the control over the spread of reprocessing technology.

The Indian nuclear test changed the international community's approach to nonproliferation and safeguards. To further curtail the spread of nuclear weapons, the United States and the Soviet Union worked to strengthen the export control provisions, known collectively as the Zangeer Committee. These export guidelines included a trigger list of dual-use items, which would require an IAEA safeguards agreement, before a supplier would agree to export certain technologies.[163]

The Indian nuclear test hastened the discussions and prompted yet another meeting of the world's major exports. The original seven members (the United States, the Soviet Union, Britain, France, West Germany, Japan, and Canada) met in London, where they agreed to follow common guidelines on nuclear transfers that included and expanded upon the items listed on the Zangger Committee's trigger list. Later, in 1977, eight other states (Belgium, Czechoslovakia, East Germany, Italy, the Netherlands, Poland, Sweden, and Switzerland) joined the group. The group of fifteen published its common guidelines in 1977 and was dubbed the Nuclear Suppliers Group (NSG). The member states were expected to adopt national legislation to enforce both the NSG and the Zangger committee.[164]

Turkey and Iran reacted differently to these new restrictions. The Shah was particularly dismayed by the U.S. led effort to curtail the spread of reprocessing

[163] Fritz Schmidt, "NPT Export Controls and the Zangger Committee," *Nonproliferation Review,* vol. 7, no. 3 (Fall/Winter, 2000), pp. 136-137.
[164] Tadeusz Strulak, "The Nuclear Suppliers Group," *Nonproliferation Review,* vol. 1, no. 1 (Fall, 1993), pp.2-4.

technology. In 1976, for example, the Shah requested a meeting with American officials, after negotiations for the conclusion of a nuclear cooperation agreement (initiated in 1974) failed to reach consensus over the reprocessing issue. The United States – motivated in part by proliferation concerns in Egypt and Israel[165] – sought to obtain a "virtual veto" over Iranian reprocessing decisions.

To do so, the U.S. first sought to convince Iran to forego pursuing the technology, before offering to purchase "burned" Iranian fuel rods, and then eventually settling on a joint commercial approach to the issue. Through the establishment of a joint commercial venture, that included American representatives, U.S. officials believed that they could gain greater control over Iranian nuclear decision-making.[166] The AEOI and the Shah refused to acquiesce to the American demands and used the promise of lucrative commercial contracts – the Shah indicated his desire to purchase eight nuclear reactors

[165] Office of Assistant Secretary of Defense for International Security Affairs to Secretary of Defense, "Nuclear Energy Cooperation with Iran (U) - Action Memorandum," n.d. [late June 1974], enclosing Atomic Energy Commission and Department of State memoranda, Freedom of Information Act Release, accessed December 11, 2013, http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc02.pdf.

[166] See: Memorandum of Conversation, "Proposed Cable to Tehran on Pakistani Nuclear Processing," May 12, 1976, available at: http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc17.pdf; U.S. Embassy Tehran to State Department, "Iranian Views on Non-Proliferation and US/Iran Nuclear Cooperation," June 7, 1976, Secret, available at: http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc19b.pdf; U.S. Embassy Tehran to State Department, "Iranian Counterproposals for Atomic Energy Agreement," July 23, 1976, Confidential Source: MR request, available at: http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc21.pdf; Memorandum for the Secretary from Charles W. Robinson, "Nuclear Negotiations with Iran," August 13, 1976, RG 59, Records of Deputy Secretary of State Charles W. Robinson, Box 6, CWR-Memos to the Secretary, July 1976-Sept 1976, available at: http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc23a.pdf; Tehran Embassy to State Department, "Nuclear Energy Discussions," August 3, 1976, http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc22.pdf.

from U.S. companies – to try and convince the United States to alter its approach to the reprocessing issue.

The Shah and Etemad both felt that the NSG was discriminatory. In 1976, Etemad told U.S. Ambassador to Iran, Richard Helms and U.S. science attaché Albert Chapman that the Shah wanted to arrange a meeting with NSG to express supliee country concerns. In a side note, Helms wrote that the reference to the NSG was a "non sequitur" and was likely a response to the Shah being "miffed at not being invited to the deliberations of the nuclear suppliers group."[167] Iran's argument was simple: as a NPT signatory, it should face no restrictions on the import of nuclear technology. Moreover, the NSG, Iran argued was outside of the NPT Treaty structure, and therefore in excess of its safeguards arrangement with the Agency.

Iran's level of development required that it import all of the material and infrastructure needed to support its nuclear energy ambitions.[168] The Shah, for example, envisioned the procurement of twenty-three reactors to produce 23,000 MW of electricity by 1992.[169] Etemad further expanded upon this vision in 1975, telling *Le Monde* that Tehran "want[s] to possess an installed power capacity of 70,000 megawatts," claiming

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[167] U.S. Embassy Tehran to State Department, "Iranian Views on Non-Proliferation and US/Iran Nuclear Cooperation," June 7, 1976, Secret, available at: http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc19b.pdf.

[168] In an interview with *Der Spiegel* in January 1974, the Shah argued that Iran's oil would be exhausted in thirty years, forcing it to extract oil from mature fields. He then explained the necessity of Tehran developing a petrochemical and pharmaceutical industry to sell products to Europe and the West in a post-oil world, saying, "I will sell oil in the form of petrochemical products. I will sell you aspirin. I will not sell you crude oil." See: "Shah Gives View on Oil in *Der Spiegel*," *Teheran Domestic Service*, in Daily Report, Middle East and Africa, FBIS-MEA-74-00, January 8, 1974, pp. K1-K9.

[169] U.S. Embassy in Tehran to State Department, "The Atomic Energy Organization of Iran," April 15, 1976, http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc14a.pdf/.

that the high figure was a result of its plans to rapidly industrialize so as to raise "the living standards of the Iranian people."[170]

To support this project, Iran relied on "super turn key" projects, whereby the supplier would provide all of the equipment for different nuclear projects, including for the Bushehr nuclear power plant, the planned Darkhovin nuclear reactor project, and the procurement of technology for the Isfahan nuclear research center.[171] The rise of non-U.S. suppliers – and in particular, Germany and France – allowed for the Shah to circumvent American efforts to curtail his reprocessing plans. Both France and Germany were members of the NSG and Zangger committee, but resisted U.S. pressure to restrict the export of reprocessing equipment. Germany, for example, made a "commitment" to export reprocessing facilities to Iran, after a pre-arranged number came online; presumably in the 1990s, after the construction of two units at Bushehr and four additional air-cooled reactors near Isfahan.[172] France agreed to similar provisions during

[170] Etemad also described the origins of the nuclear project, telling the reporter that "for a certain number of years his imperial majesty has proposed a new energy program according to which fossil fuels would no longer be used to produce energy but as a raw material in industry." See: "Le Monde Interviews Iranian Nuclear Energy Official," *Le Monde*, in Daily Report, Middle East and Africa, FBIS-MEA-75-241, December 15, 1975, p. R1.

[171] The construction of the Bushehr power plant was initially overseen by Germany's Kraftwerk Union. Darkhovin would have been overseen by Framatome. The AEOI also planned to establish five divisions at the French built Isfahan nuclear research center, with the two most important being reactor physics and metallurgy. The other three divisions were intended to study fuel fabrication, uranium chemistry, and desalinization. Iran set aside $300 billion for construction and envisioned employing 1,200 researchers at the site. See: "Le Monde Interviews Iranian Nuclear Energy Official."

[172] "The Secretary's Meeting with FRG Ambassador von Staden on the FRG/Iran Agreement for Nuclear Cooperation," Secret, Memorandum of Conversation, July 2, 1976, Kissinger Transcripts, KT01982, Digital National Security Archives; "FRG, Iran Negotiating Nuclear Energy Agreement," *Hamburg DPA*, Daily Report, Middle East and Africa, FBIS-MEA-76-09, May 12, 1976, p. R1; FRG Firm may sell more Nuclear Power

its negotiations with Iran; including an agreement to provide a large hot-lab facility, which would have allowed for Iranian scientists to conduct separation experiments.[173]

After the Iranian revolution, the Islamic Republic cancelled its nuclear contracts with western suppliers. Thereafter the program atrophied for close to three years, before the Iranian leadership sought to finish the Bushehr reactor, which included two reactors that before the Revolution were 80 and 50 percent complete.[174] Iranian efforts to do so were blocked by the United States, which put pressure on Germany to limit its nuclear cooperation with Iran after the Revolution.

The resumption of nuclear cooperation with Germany was further complicated by the Iran-Iraq war, which German officials maintained was the reason for the decision not to export components for the reactor.[175] Furthermore, the export of Zangger committee controlled "trigger list" items required a new export agreement, after the Shah-era export license expired in 1984.[176] As such, the two sides never did conclude an agreement to restart work at Bushehr, despite sustained German interest up until 1987, when sustained

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Stations to Iran," *Hamburg DPA*, Daily Report, Middle East and Africa, FBIS-MEA-77-120, June 22, 1977, p. R2.

[173] "Nuclear Energy Cooperation Discussed," Daily Report, Middle East and Africa, FBIS-MEA-75-235, December 5, 1975, p. R2; "Le Monde Interviews Iranian Nuclear Energy Official."; U.S. Embassy in Tehran to State Department, "GOI/AEOI Plans for Isfahan Nuclear Technology Center, ENTEC," February 14, 1977, Secret, available at: http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc25b.pdf.

[174] "Bonn Concern Ends Iran Nuclear Pact," Special to The New York Times. New York Times (1923-Current file) [New York, N.Y] 01 Aug 1979: D3.

[175] In December 1982 the AEOI requested a team to visit Bushehr to make an assessment about finishing at least one of the reactors. KWU agreed to send a 40-50 person team some time in 1983 but made clear that actual construction work would only take place after the end of the Iran-Iraq war. See: Ann MacLachlan, "Iran Seeking way to Finish Bushehr Plant but Bonn Denies Exports," *Nucleonics Week,* vol. 27. No. 44, October 30, 1986.

[176] *Ibid*; Richard Kessler, "Argentines Hope for Expanded Iran Contacts from Tehran Talks," *Nucleonics Week,* vol. 27, no. 50, December 11, 1986.

Iraqi air attacks resulted in the death of a German engineer and the proclamation that the site was unsalvageable.[177] In response, AEOI director Amrollahi wrote in a personal cable to IAEA Director Hans Blix, that the agency's meek response to the bombing was tantamount to giving "tacit approval for the Iraqi strike."[178]

In parallel, the Islamic Republic's outreach to Argentina in 1983 for the procurement of conversion equipment for the Isfahan nuclear research center was also blocked by the United States. While the two sides did eventually conclude an agreement for the conversion of the Tehran Research Reactor to run on LEU fuel, the scope of the agreement was far more circumscribed than both sides had initially indicated; indeed Iran had approached Argentina about working as part of a larger consortium to finish work at Bushehr in 1986.[179] During that same year, Iran first approached Pakistan about acquiring the full front end of the fuel cycle. While the offer was rebuffed, this sequence of events did eventually result in Iran making contact with the AQ Khan network and beginning its illicit nuclear enrichment program, presumably with the intention of developing nuclear weapons.

The timeline suggests the following about the relationship between nonproliferation norms and nuclear decision-making. First, both the Shah and the Islamic Republic had similar points of view about the NPT and the NSG/Zangger committee guidelines; both thought they were discriminatory. The critical difference is that the Shah

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[177] Gamini Seneviratne, "Iranians Charge that KWU Refuses to Start Work on the Reactor," *ibid,* vol. 28, no. 7, February 12, 1987; Mark Hibbs, "Iraqi Attack on Bushehr Kills West German Nuclear Official," *ibid,* vol. 28, no. 47, November 19, 1987; Idem, "Bushehr Construction now Remote after three Iraqi air Strikes," *ibid*, vol. 28, no. 48, November 26, 1987.

[178] "IAEA's Response to Bushehr called 'Mockery'," *IRNA*, in Daily Report, South Asia, FBIS -NES-87-228*,* November 26, 1987.

[179] "Consortium proposed for Bushehr completion," *Nuclear News,* April 1987.

was able to procure nuclear technology from France and Germany, whereas the Islamic Republic could not. The Islamic Republic has admitted that its initial work on centrifuges began in 1985, whereas Germany and Argentina's role in constructing Bushehr ended in 1987. Furthermore, between 1979 and 1982, the Islamic Republic cancelled the Shah's nuclear program. Nevertheless, during that three-year window (1982-1985), the Islamic Republic was labeled as a proliferation concern and the U.S. did take steps to limit cooperation with other countries.[180] However, the American nonproliferation policy does not appear to have been the causal reason for the decision to proliferate.

The Islamic Republic's statements at this time suggest that leadership believed that the world ignored nonproliferation during times of conflict. Rafsanjani, for example, called for the development of nuclear weapons in 1988, saying, "that the moral teachings of the world are not very effective when war reaches a serious stage and the world does not respect its resolutions and closes its eyes to the violations and all the aggressions which are committed in the battlefield."[181] This statement suggests that the Islamic Republic's lack of faith in the viability of nonproliferation to prevent proliferation – and then to ultimately be used to condemn or stop a WMD using state – contributed to the decision to proliferate. This conclusion indicates that the Islamic Republic's

[180] In the 1980s the Reagan administration, suspecting Tehran's secret interest in the Bomb, began to work to prevent the export of nuclear equipment to the Islamic Republic. The American nonproliferation efforts were largely successful but did not prevent Tehran from clandestinely acquiring dual use equipment to support the enrichment program. In September 1982, just before the outbreak of the Iran-Iraq war, the administration announced the creation of a list of sixty-three countries - including Iran - that would need specific government approval to receive nuclear exports. See: Milton R. Benjamin, "Administration Will List 63 Countries Subject to Nuclear Export Restrictions," *Washington Post,* September 9, 1982.

[181] "Hashemi-Rafsanjani Speaks on Future of IRGC," *Tehran Domestic Service*, Daily Report, Near East & South Asia, FBIS-NES-88-195, October 6, 1988.

dissatisfaction with its treatment on the further development of its civil nuclear program (Bushehr) was, at best, further confirmation of an assumption made about the inability of Iran to rely on nonproliferation norms for security made before the 1984 decision to finish work at Bushehr.

There is also evidence to suggest that the imposition of supplier controls affected Turkish nuclear decision-making, albeit in the opposite way to that of the Islamic Republic. Turkey changed its approach to the NPT in 1977. Its reason for doing so was simple: As a non-signatory to the Treaty, Ankara would not have been able to pursue a nuclear energy program because it would not have been able to import the needed infrastructure from the established suppliers; all of which were NSG members by that time. The reasons for the Turkish decision to develop a civil nuclear program will be discussed in the next section; however, for economic reasons related to the 1973 energy crisis, Turkish politicians prioritized the development of nuclear energy. This decision prompted a re-evaluation of long-dormant plans to procure a reactor from a foreign vendor. The Turkish government issued a license for the Akkuyu site in 1976, and thereafter Ankara began exclusive bilateral negotiations with the two state-owned Swedish firms - Asea-Atom and Stal Laval - for the construction of a 660 MW heavy water reactor.[182]

By that time, Sweden had agreed to abide by NSG export guidelines. Turkey, therefore, had to have a safeguards agreement in place with the IAEA to allow for the

[182] Ahmet Kutukcuoglu, "Turkiye'nin Gecmisteki Nukleer Enerji Deneyimleri," *Uluslararasi Nukleer Teknoloji Kurultayi*, October 12-15, 1993; Ankara Makine Muhendisleri Odasi (Chamber of Mechanical Engineers), Ankara, Publication No 168 (March, 1994). See also, Mustafa Kibaroglu, "Turkey's Quest for Nuclear Power," *Nonproliferation Review,* vol. 4, no. 3 (Spring/Summer 1997), pp. 33-44.

export of certain Swedish technology to support the country's nascent nuclear plans. As such, in 1977, the Turkish government expressed its desire for parliament to ratify the NPT, so as to allow for Ankara to receive assistance from the European Economic Community (EEC) for the construction of a nuclear technology center, as well as to support the reactor negotiations.[183] Furthermore, this action was intended to complement the on-going efforts to secure an agreement with Sweden for the planned reactor project. Parliament agreed to take the issue of ratification on December 11, 1977, but in the turbulent political atmosphere it was not ratified until November 28, 1979.

Ankara's negotiations with Asea-Atom and Stal Laval stalled in 1979, after Turkey asked that Sweden finance the cost of construction. The negotiations were formally cancelled in 1980, after the Swedish government cited its concerns about providing nuclear technology to a military run government after the September coup.[184] Turkey's civil nuclear plans moved in parallel to its continued reliance on nuclear weapons for collective defense from the Soviet Union. As such, during the 1980s, Ankara continued to indirectly support the use of nuclear weapons for its defense, before taking a different approach to the issue during the 1990s.

Turkey's policy shift was linked to three interrelated issues: First, NATO decreased its reliance on nuclear weapons; Second, Turkey's greatest security threat, the Soviet Union, collapsed; Third, the nature of the threat to Turkey changed from that of conflict with a superior adversary, to that of potential conflict with less powerful states,

[183] "Turkey's position toward the nuclear nonproliferation treaty (NPT)," Memo. White House, Top Secret, December 9, 1977, Declassified: 1 February 2005.
[184] Metin Demirsar, "The Turkish Electricity Authority (TEK) Plans to Reissue Tenders," *Nucleonics Week,* vol. 23, no. 15, April 15, 1982.

like Iraq, Syria, and Iraq. And in these three cases, the leadership was suspected of pursuing WMD and ballistic missiles to augment their military capabilities. To address these threats, Turkey adopted a two-pronged policy of conventional defense, paired with the acceptance of a multi-lateral approach to preventing further proliferation; particularly after the 1991 revelations about Iraq's nuclear program.

This change in approach resulted in a re-evaluation of Ankara's approach to nonproliferation. Hence, in stark contrast to the policy of apathy adopted in the 1970s and 1980s, Turkish policymakers have made it a priority to rapidly adopt new nonproliferation instruments, shortly after they are made available for signature. For example, Ankara has now signed and ratified the Comprehensive Test Ban Treaty (CTBT), the IAEA's more intrusive inspection regime, known as the Additional Protocol, whilst also joining the Nuclear Suppliers Group.

Turkey's support for these agreements is conditioned on three assumptions. First, Turkey's acceptance of nonproliferation norms will not hinder its efforts to procure civil nuclear technology. Second, the adoption of nonproliferation instruments benefits Turkish soft power by signaling its commitment to deal with a share problem through multi-lateral forums and treaties. Third, the adoption of a universal set of norms allows for Ankara to address one of its more pressing security concerns: the proliferation of WMD in the Middle East.

This approach differs from many of Turkey's western allies, (including the United States and the United Kingdom), which have sought to make it more difficult to import enrichment and reprocessing technology in recent years. Turkey has objected to efforts to "black-box" (where design information is withheld from the end-user to prevent

proliferation of sensitive technologies) enrichment and reprocessing technologies. Turkey has instead supported the conditioning of the transfer of these items on a state being in compliance with its IAEA safeguards provisions and its acceptance of the Additional Protocol.[185] This approach suggests that Ankara has adopted a very rigid interpretation of the NPT, albeit while acknowledging that the control of sensitive exports is beneficial for its security.

Findings

The evidence suggests that both Iran and Turkey had similar reasons for signing the NPT. For Iran, the acceptance of nonproliferation was linked to its concerns about regional proliferation, as well as the belief that adherence to the Treaty would allow for it to gain access to western nuclear technology. Turkey adopted the Treaty for similar reasons and has also resisted efforts to prevent the sharing of technologies with importing states. The Islamic Republic chose to follow a similar policy at the outset of its rule, albeit while making clear that it did not intend to rely on the West for nuclear technology. Neither the Shah, nor the Islamic Republic believed that the Treaty was fair; both governments believed that the Treaty was discriminatory.

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[185] Fred McGoldrick, "Limiting Transfers of Enrichment and Reprocessing Technology: Issues, Constraints, Options," Belfer Center for Science and International Affairs, Harvard Kennedy School, Project on Managing the Atom, May 2011, available at: http://belfercenter.ksg.harvard.edu/files/MTA-NSG-report-color.pdf; "Communication Received from the Permanent Mission of the United States of America to the International Atomic Energy Agency regarding Certain Member States' Guidelines for the Export of Nuclear Material, Equipment and Technology," International Atomic Energy Agency, INFCIRC/254/Rev.11/Part 1a, November 12, 2012, available at: http://www.nuclearsuppliersgroup.org/Leng/PDF/infcirc254r11p1.pdf; Author email interview with a Turkish foreign policy official on condition of anonymity, February 6, 2014.

Nevertheless, both governments had an incentive to support nonproliferation, owing to concerns about the Arab states' development of nuclear weapons. The data indicates that Iran changed its approach to nonproliferation for two reasons. First, for security related reasons, Iran began to explore WMD to deter Iraqi chemical weapons attack. Second, and related to this, the political leadership made the determination that it could no longer rely upon nonproliferation instruments to condemn and prevent WMD acquisition during times of conflict. During the Iran-Iraq war, and subsequently thereafter, the Iranian leadership has maintained that the West's overarching policy goal is to overthrow the Islamic Republic. This approach appears to have justified the continued pursuit of nuclear weapons after the Iran-Iraq war, ostensibly because they could be used to deter external aggression.

Turkey's approach to nonproliferation norms was opposite to that of Iran's. During the 1970s, Turkey adopted an approach similar to that of the Islamic Republic, albeit while foregoing proliferation, in favor of pushing for predelegation of U.S. tactical nuclear weapons to defend against a Soviet attack. Similarly, in response to the Iraqi threat, Ankara adopted nonproliferation as policy mechanism to defend against potential WMD threats. This approach resulted in Turkey signing every major nonproliferation Treaty and taking an active part in the formulation of nuclear export guidelines.

This suggests that states are more likely to shun nonproliferation, when faced with a HIGH security threat; specifically, a WMD armed HIGH security threat. In the case of Turkey, however, Ankara has remained committed to nonproliferation, even after concerns about Iran's pursuit of nuclear weapons became a focal point of the international community after the 2002 revelations described in the previous chapter.

This suggests that security concerns affected Turkish and Iranian approached to nonproliferation norms. It also confirms that the nonproliferation norm is sufficiently robust enough to withstand shocks, like in the case of Turkey.

Input 2: Economics and the "Internationalizing" Model of Political Survival

Liberal theorists suggest that countries dependent on global trade are less likely to proliferate, while conversely economically isolated states that are less integrated with the world economy, are more likely to pursue nuclear weapons. Etel Solingen argues "systemic differences in nuclear behavior can be observed between states whose leaders or ruling coalitions advocate the integration in the global economy, political, economic, reputational, and opportunity costs of acquiring nuclear weapons because such costs impair a domestic agenda favoring internationalization."[186] To test this theory, Solingen relies on nine case studies comparing Asian and Middle Eastern countries' nuclear decision-making. Solingen's work, however, does not provide a comprehensive definition for the study's key dependent variable, nuclearization; choosing to define it as moving towards nuclear weapons, without defining what that means.[187] Conversely, denuclearization is defined as the renunciation of nuclear weapon, without detailing what such a process would entail.[188]

Moreover, as part of the analysis, Solingen does not differentiate between the two types of economic models prevalent in the Middle East: import substitution industrialization/autarkic and rentier economic models. With regards to the latter, Gregory Gause notes that in the oil exporting Gulf States, the state has co-opted tribes

[186] Solingen, *Nuclear Logics: Contrasting Paths in East Asia & the Middle East*, p. 7.
[187] Ibid, p. 46.
[188] Ibid, pp. 43-44.

and replaced the traditional economic model, Bedouin caravan style trade, to ensure political stability.[189] To support this method of governance, the Middle Eastern states rely on their oil largess, which allows for the paying of stipends to key tribal leaders, the religious community, and to the populations being governed. To support these patronage networks, rentier states rely on oil exports.

This means that whilst these governments are inward looking, they ultimately rely on economic growth to sustain political power; ultimately this includes efforts to use energy resources to enhance foreign direct investment. Furthermore, Solingen argues that state efforts to encourage economic growth is a proliferation constraint, owing to the fact that it incentivizes regional cooperation, which then decreases the salience of arguments made in favor of nuclear weapons by elements of the national security apparatus.[190] By contrast, inward looking coalitions, heavily influenced by the national security apparatus are more likely to proliferate.

In much of the Middle East, the regime is upheld by the aforementioned oil/energy patronage, as well as a strong security state. As such, these governments are also dependent on similar factors that Solingen describes as proliferation constraints, including: the need for regional cooperation and stability, a strong reputation as a safe haven for foreign direct investment, and an aversion towards engaging in behavior that could result in sanctions.

Methods of Political Survival

[189] F. Gregory Gause, *Oil Monarchies: Domestic and Security Challenges in the Arab Gulf States* (New York: Council on Foreign Relations, 1994) pp. 10-11.
[190] Solingen, *Nuclear Logics: Contrasting Paths in East Asia & the Middle East* p. 43.

The UAE, in particular, brands itself as both a haven for FDI, while also running a very efficient – and brutal – security service to suppress internal dissent. The same can be said for Saudi Arabia, as well as Qatar. The presence of these regimes, combined with their hitherto policy of nonproliferation, requires are more in depth look at how states "internationalize" and the methods by which these states ensure a strong alliance with the world's most powerful states and whether there is a link to proliferation decision-making.

For much of the Cold War, both Iran and Turkey pursued similar strategies to ensure the viability of the regime. In Iran, the Shah branded himself as a potential partner, through which the United States could blunt the further expansion of Soviet allied communist/nationalist regimes in the Middle East. Turkey pursued a similar strategy: branding itself as NATO's outermost bulwark against a Soviet incursion of Western Europe. This approach resulted in two different approaches to nuclear weapons: the Middle Eastern focused Shah disregarded nuclear weapons, whereas the Soviet focused Turkey integrated nuclear weapons into its security doctrine.

As for the United States, its provision of arms and aid to both countries was intended to deepen the security relationship and ultimately tie Iran and Turkey to the U.S. led Western bloc. This perception of shared security concerns resulted in the both countries gaining international credibility, regardless of tangential issues like economics and democratic governance. For example, up until 1980, Turkey shunned the adoption of export-oriented capitalism, choosing instead to pursue a state driven model of development, first outlined by the country's founder, Mustafa Kemal, after the establishment of the Turkish Republic in 1923. Indeed, enshrined in Turkey's

constitution are Mustafa Kemal's "six-arrows,"[191] which together outline the founding principles of Kemalism, and thereby are intended to serve as the Republican ideology. Included in these arrows is the principle of "statism" as the idea economic model for Turkey.

The Shah pursued a similar strategy of relying on shared security concerns to "internationalize", albeit through a different model that emphasized Iran's conventional military prowess, and its ambitions to partner with the United States to police the Persian Gulf. Taken together, both countries used shared security concerns to ingratiate themselves with their most important ally, the United States, which then in turn helped to further integrate both governments with the Western bloc. Internally, both countries relied on different means to ensure political survival. The Shah was a dynastic monarchy that ultimately relied on oil patronage and internal security services to ensure law and order.[192] Turkey, by contrast, operated as a hybrid regime, wherein elections were regularly held, but the civilian rulers were rivaled by the country's military, which viewed itself as the protector of the value of the Turkish Republic.[193]

As such, the military has overthrown four elected governments in Turkey, ostensibly over concerns related to the erosion of Kemalist secularism, in favor of Islamic conservatism. For the Western bloc, the military was often trusted to "get things done" when it came to important security cooperation related matters. Consequently, Turkey's most important ties to its Western allies were often military-to-military, rather than

[191] The six arrows include: Republicanism (cumhuriyetçilik), Populism (halkçılık), Nationalism (milliyetçilik), Secularism (laiklik), Statism (Turkish: devletçilik), and Reformism (Turkish: devrimcilik).
[192] Abbas William Samii, *The Role of SAVAK in the 1978-1979 Iranian Revolution* (Cambridge: Cambridge University Press, 1994).
[193] William Hale, *Turkish Politics and the Military* (New York: Routledge, 2006).

through a more traditional approach of frequent contact between civilian diplomats and bureaucrats.

Nuclear Decision-Making in Iran and Turkey: Methods of Political Survival

These different dynamics allows for the testing of Solingen's hypothesis. Between 1923 and 1980, Turkey was an autarkic government that shunned export oriented capitalism. Iran, by contrast, is a rentier state, which relies on oil largess to fund its government institutions. Did Turkey and Iran's "inward looking" economic status affect its nuclear decision-making? Did Turkey's adoption of an export oriented economic model alter its approach to nuclear weapons/nuclear energy? Do more internationalist Iranian leaders approach nuclear issues differently than their more nationalist and inward oriented looking counterparts?

By answering these questions, this section also addresses this dissertation's research question: Do similar states respond similarly to the same external inputs? In this section, these inputs include: the 1973 oil crisis, negotiations with western suppliers, and the cancellation of the program in 1979/1980. The data suggests that Iran's rentier status was an asset for its early pursuit of nuclear energy, but that its civil nuclear progress was tied to high oil prices, and thus was affected after the 1978 decrease in oil prices. As such, one would expect Iranian decision-making to be affected by the slump in oil prices during the 1980s. However, in contrast to the decisions made after 1978 (and before that between 1972-1977), the Islamic republic re-launched its nuclear program at a time of historically low energy prices – perhaps in a further indication of weapons intent. By contrast, Turkey's poor economic state hindered its development of nuclear energy and ultimately resulted in Ankara crafting a unique financing model to procure nuclear

reactors (intended to decrease the greatest source of Turkish economic vulnerability, its perpetually high current account deficit), which tangentially resulted in an ownership model that prevents proliferation.

In effect, Iran's rentier status enabled its nuclear ambitions, and thereby allowed for the country to put in place the infrastructure through which it would later proliferate, whereas Turkey's financing concerns resulted in the creation of a financing model that has made proliferation all but impossible. These decisions resulted from a series of dynamics independent of the political outlook of the leadership in power. After the revolution, Iran relied on its oil largess to circumvent the U.S. backed sanctions regime – which thereby allowed for it to continue to procure nuclear technology – whereas Turkey sought to use its electricity sector (including its planned nuclear power program) to increase FDI. This data suggests that the role of nuclear financing – and not economic models per se – also play a role in nuclear decision-making; including a series of decision in Turkey that resulted in the signing and ratifying of the NPT and then the pursuit of a financing model that hinders proliferation.

Oil Politics and Iran's Challenge to the International System

Iran's early development of nuclear energy garnered little interest from the Shah. By contrast, Turkish President, Adnan Menderes, prioritized the procurement of nuclear technology, with the intention of using the Atoms for Peace program as a basis for domestic nuclear energy program.[194] In both cases, however, the political leadership showed little interest in developing nuclear energy during the 1960s.

[194] Incoming Telegram, Department of State, File no: 611.8297/10-1555, October 15, 1955, General Records of the Department of State, National Archives and Records Administration, RG 59, Box 2553; The Shah put off signing the nuclear cooperation

The key catalyst for the two countries' development of more extensive civil nuclear program was the dramatic increase in the price of energy, after the 1973 oil embargo. In this regard, the Shah was a key actor in challenging the Western preferred energy market. The price of oil reached an all-time low in 1970. The combination of the price decrease and a devaluation of the dollar prompted suppliers to take steps to increase their share of the oil revenues. At that time, most countries exported through a foreign consortium that operated on a 50-50 revenue sharing agreement. In 1971, at the behest of the Shah, the OPEC countries negotiated with the oil producers as a group and sought to make sweeping changes to the concession arrangements. After Libya was able to extract concession from Occidental Petroleum in 1970, the oil suppliers were intent on increasing revenues.[195]

The threat of nationalization proved successful and, according to American economist Charles Issawi, "On the advice of the State Department, the companies agreed in February 1971 to a rise in price from $1.80 to $2.18 and an increase in tax from 50 to 55 percent." As excess supply decreased globally, the Middle East accounted for the only area of production growth during the 1960s and 1970s. In addition, the economies in the West and Japan boomed in the late 1960s, which contributed to an increase in oil prices

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agreement with the United States, over concerns that news about the agreement would be widely reported as it was a matter of public record leading to the loss of the anticipated political gains. This in turn illustrates that the Shah was far more interested in the political prestige attending the cooperation agreement than in its actual substance. See: Incoming Telegram, Department of State, September 13, 1956, *General Records of the Department of State, National Archives and Records Administration, RG 59, Box 2558*; Outgoing Telegram, Department of State, File 611.8897/7-1856, September 18, 1956, *ibid*; Outgoing Telegram, Department of State, File 611.8897/9-1356, October 31, 1956, *ibid*.

[195] Peter Mansfield, *A History of the Middle East, 2nd Edition* (London: Penguin Books, 2003), pp. 283-287.

even before the 1973 embargo. Yet, as a result of the embargo, the global price of oil rose dramatically, increasing fourfold shortly after the embargo was announced.[196]

The dramatic rise in oil prices had opposite effects on Turkey and Iran, but nevertheless ended in the same policy: the prioritization of the development of nuclear energy. As of 1970, oil accounted for 42.3 percent of Turkey's energy production, and any increase in price contributed to its balance of payments issue. To this end, Ankara sought to address its reliance on imported energy, which thereby hastened the government's interest in nuclear energy. The Turkish leadership revisited nuclear plans first drafted in 1965[197] and hastened the licensing of the Akkuyu site in 1976, before opening negotiations with Asea-Atom and Stal Laval in 1977.

Iran, by contrast, began its first feasibility studies into the development of nuclear power in 1972; thereafter in 1974, the Shah confidently declared during his annual Norouz (Persian New Year) speech that "a new era was ushered in during the previous year" representing "a new order more logically in line with the realities of the international community." He then noted that "major changes" had affected the implementation of the previously drafted five-year economic plan and those changes "paved the way for the implementation of projects which were well beyond the programs

[196] Charlies Issawi, "The 1973 Oil Crisis and After," *Journal of Post Keynesian Economics*, vol. 1, no. 2 (Winter, 1978/79), p. 10.

[197] The first studies to develop nuclear power were initiated in 1965 by the Electrical Power Resources Survey Administration (Elektrik İşleri Etüd İdâres - EIEI). Since Ankara lacked the trained personnel to undertake the research on its own, it partnered with nuclear firms in the United States, Switzerland, and Spain to help expedite its nuclear energy plans. The EIEI concluded that Turkey should build 400 MW pressurized heavy water reactor with the cooperation of Canada's AECL. See: Nejat Aybars, "Implementation of Nuclear Power Plant in a Developing Country: The Case of Turkey," paper presented at the 17th Annual Canadian Nuclear Society Conference, June 9-12, 1996.

originally envisioned;" including the utilization of "nuclear energy as soon as possible so that the consumption of oil this vital and exhaustible material whose notability we have been able to prove, is reduced to a minimum so that this precious substance can be used to produce chemical and petrochemical products instead of being used as ordinary fuel."[198]

Iran's oil largess allowed for it to bypass American nonproliferation pressure, particularly with regards to its purchase of reprocessing technology. For much of the decade, the U.S. sought to convince Iran to forego reprocessing and put pressure on France and Germany to refrain from selling Iran reprocessing equipment. The Shah was able to take advantage of two issues to side-step American pressure. First, France and Germany were wary of limiting their nuclear exports, owing to industry related concerns, and an overarching government supported policy of gaining greater market share in the American dominated nuclear export market.[199,200] Consequently, both countries were more laissez-faire about nuclear exports Second, and relatedly, the sheer size of Iran's

[198] "Shah Addresses Nation on New Year," *Teheran Domestic Service*, in Daily Report, Middle East and Africa, FBIS-MEA-74-057, March 21, 1974, p. K1.

[199] Bertrand Goldschmidt, France's director of international relations for Commissariat à l'énergie atomique and the French government's representative to the IAEA between 1958 and 1980, described the French position on nonproliferation as follows: "Nuclear energy is for a number of countries a competitive source of energy indispensible for development. France is willing to assist them in developing nuclear power, will guarantee the fuel supply of the power plants it exports, will furnish fuel cycle services and will transfer much needed technology." See: Bertrand Goldschmidt, "A Historical Survey of Nonproliferation Policies," *International Security*, vol. 2, no. 1 (Summer, 1977), pp. 81-82.

[200] Harald Müller describes West Germany's approach to nonproliferation as follows: "in the seventies and eighties, Germany behaved according to the letter of her NPT obligations. At the same time, Germany concluded nuclear trade agreements (with Iran, Brazil, and Argentina) that were not exactly conducive to the lofty goal of nonproliferation." See: Harald Müller, "German national identity and WMD proliferation," *Nonproliferation Review,* vol. 10, no. 2, (Summer, 2003), pp. 2-3.

planned nuclear program allowed for Iran to purchase an incredible amount of nuclear related infrastructure, without having many concerns about financing.

By 1977, however, financing issues, linked to a global decrease in oil prices, began to plague Iran's nuclear program. During a speech to the Iranian Parliament, indicated that Iran was having trouble abiding by the original terms it had reached with Framatome for the sale of two reactors in the Darkhovin, with Etemad telling the budget committee, "[work on the two reactors] will begin "as soon as the difficulties relating to our financial ability are solved."[201] Similarly, during the signing ceremony for four additional German built reactors that same year, Etemad was evasive about how Iran would finance construction, saying "all possible means of financing, such as export credits or payment through oil deliveries, were discussed."[202] In both cases, Iran was reported to have favored oil deliveries, rather than cash payments as had been previously agreed to.

Compare this with Turkey, which ran out of foreign currency reserves in 1973, largely because the dramatic increase in energy prices after the oil crisis.[203] Turkey's turn to nuclear power was thus a reflection of its energy poverty and the determination to diversify Turkey's sources of energy, in order to insulate the country from future energy shocks. Ankara's efforts in this regard were unsuccessful and during the second oil crisis

[201] "Officials Discuss Petrochemical, Nuclear Projects," *Teheran Domestic Service*, as published in Daily Report, Middle East and Africa on March 1, 1977, R1.
[202] "FRG Firm may sell more Nuclear Power Stations to Iran," *Hamburg DPA*, Daily Report, Middle East and Africa, FBIS-MEA-77-120, June 22, 1977, p. R2.
[203] By 1979, Turkey's energy situation was precarious the Deputy Director of Turkey's Petroleum Corporation (TPAO) told an American diplomat that Ankara had only one day's reserve of crude oil stored at its refineries. See: "Turkey Seeks Deferred Payment Terms on Oil," Confidential Cable Ankara, IR01330, March 6, 1978; "Turkey's Petroleum Supply Situation," Confidential, Cable Ankara, IR02267, February 9, 1979, Digital National Security Archives.

in 1979, Turkish Prime Minister Bulent Ecevit told his Cabinet that "there's no oil, no foreign currency, no goods, no raw materials, no fertilizers, and no production ... we can't even close the 351 billion Lira deficit by printing money."[204]

These economic concerns prompted Ankara, in 1977, to propose a unique financing model, which envisioned Sweden paying for the cost of construction for the Akkuyu reactor, in exchange for guaranteed electricity sales, set a fixed rate for a fixed period of time (usually between 15-20 years). The model was financially unpalatable for Sweden, owing to third party financing concerns about the need to expend such a large sum of money up-front, without adequate Treasury guarantees from the Turkish side that the loan would be paid back in full. Ankara has historically dismissed these financing related concerns, citing the guaranteed purchasing arrangement as proof of its intent to repay the vendor in full. This approach, however, remains controversial, owing to third-party financing concerns about foregoing profit on their initial billions of dollar investment for at least 15 years. The negotiations collapsed in 1980, after the Swedish government withdrew from the negotiations, ostensibly over concerns about supplying a reactor to a country governed by a military junta.

Findings

The history indicates that the initial reason for Iran and Turkey's prioritization of nuclear energy was the dramatic increase in energy prices after the events in 1972/1973. Iran's oil wealth was the key asset that allowed for it to rapidly expand the program. Turkey's energy poverty was a liability and ultimately deprived it of the most important resource needed to realize its nuclear energy policy: foreign currency. The relationship

[204] Nicole Pope and Hugh Pope, Turkey Unveiled: A History of Modern Turkey (New York: overlook press, 2004), p. 129.

between nuclear financing and nonproliferation remains understudied. In these two cases, however, there was a link between access to foreign currency and nuclear progress. Iran's nuclear program, for example, began to slow in 1977, due to a decrease in oil prices. Turkey, on the other hand, created a financing vehicle to side step the foreign currency issue all together through its vendor-financing model. These decisions were made independent of each country's economic model, as well as the methods each country used to internationalize, and thereby help guarantee regime security.

With regards to Solingen's hypothesis: Turkey chose not to pursue nuclear weapons during this time period. The sheer size of Iran's nuclear ambitions have prompted speculation that the Shah intended to develop a nuclear weapon. This study tests this assumption, using the two models described in the previous chapter:

Measuring Nuclear Latency: Iran (1972-1979)			
Highly Enriched Uranium	**Research**	**Plutonium**	**Research**
Uranium mining	Yes	Uranium mining	Yes
Milling	Yes	Milling	Yes
Conversion to UF6	Yes	Fuel rod fabrication	Yes
Enrichment	Yes	Nuclear Reactor	Yes
Weapons specific experiments	No	Weapons specific experiments	No
Subjective Variables			
Leader statements: The Shah did indeed make a statement suggesting an interest in nuclear weapons. In 1974, the Shah told a journalist from France's *Les Informations* that Tehran would have nuclear weapons "sooner than you think," but "unlike India we have first thought of our people and then of technology."[205] The Shah later backtracked in a follow-up interview, declaring his indirect embrace of nonproliferation. The Shah subsequently labeled the nuclear arms race "ridiculous," and often times expressed his response to proliferation concerns in the form of a question, saying, "What do people want with nuclear weapons?" before adding that Iran would "never be able to achieve [nuclear] parity with the big powers." Thus, for			

[205] "Shah Implies Iran may have Nuclear Weapons Soon," *Hong Kong AFP*, in Daily Report, Middle East and Africa, FBIS-MEA-74-122, June 24, 1974, p. R1; U.S. Embassy in Paris to Department of State, "Interview with Shah," June 24, 1974, http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc01a.pdf.

Iran, the idea of pursuing nuclear weapons was illogical. However, he then inserted a caveat, whereby he left the nuclear option open, should smaller countries in the region proliferate and thereby erode Iran's conventional military superiority.[206]
Adversary Perception: There is no independent evidence of regional concerns about Iran's nuclear program; however, it is likely that there were concerns in neighboring Iraq about the Shah's program. In a sign of their then alliance, Israel maintained a close relationship with the Shah at this time in history, going as far as to collaborate on a missile program.
Conclusion: The Shah's ambitions nuclear program had all of the technical components to support a nuclear weapons program, albeit with one key omission: weapons specific experiments. Furthermore, Iran's selection of a light water reactor suggests civil intent. Proliferators have tended to rely on heavy water reactors because they produce weapons usable plutonium more easily. To date, there is no open-source evidence indicating Iran's pursuit of weapons specific experiments. Based on this data, this study has concluded that Iran did not have a dedicated weapons program, and chose instead to tepidly embrace nonproliferation. To be clear, the Shah indicated that he could have chosen to pursue a weapons program, should nonproliferation fail to guarantee regional nonproliferation.

Post-Revolution: A New Turkey and Iran's Axis of Resistance

Solingen explores the Islamic Republic's nuclear decision-making and ultimately attributes the country's "schizoid" foreign policy to an internal battle between elements of the foreign policy establishment eager to "internationalize the economy," compared to different elements eager to keep Iran's economy closed. As such, Iranian moderates, which include President Mohammed Khatami, who served from 1997 to 2005, and current President Hassan Rouhani, would be expected to take steps to curtail Iran's illicit weapons program. Conversely, an inward looking leader, like former President Mahmoud Ahmedinejad, would be more amenable to risk adverse behavior, owing to his disdain for the international global order, and his reliance upon the Iranian security sector for political support. The role of individuals will be discussed in detail in the following chapter, but with regards to this hypothesis, the data suggests that Iranian leaders favoring internationalization methods of political survival held little sway over Iran's

[206] "Shah Interview on Oil, Economic Aid, and Nuclear Arms," *Le Monde*, FBIS, Daily Report, Middle East and Africa, June 27, 1974, p. R1.

nuclear weapons program, which suggests that the outlook of the individuals in charge of nuclear decision is a better method of analysis, rather than a focus on the state as a whole.

In Turkey, the post-1980 political landscape in Turkey resulted in a determined effort to privatize the statist led economy. However, these efforts were not universally embraced by the parties in power. Instead, different political parties advocated for different economic systems, with some pushing for a more Islamist political model, whereas other sought to marry Ataturk inspired statism with import substitution industrialization. With regards to nuclear energy, however, all pursued a similar vendor-financing model to the one used during the short negotiations with Sweden in the late 1970s. This suggests that different political parties sought to use the energy sector more broadly to encourage FDI, but nevertheless adopted political platforms that shunned full internationalization with the world's institutions. This suggests that the relationship between the economic model pursued, internationalization, and the method of regime survival are independent of Turkish nuclear decision-making. Instead, the key variable influencing much of Turkish decision-making is project financing; a constraint not present in rentier economies, and therefore worthy of a more comprehensive comparison.

Iran

As described in the previous chapter, Iran began to acquire the material to support an enrichment program in 1985. The program accelerated in 1987, after Iranian officials procured centrifuge related documents and equipment from the AQ Khan network. Just a few months later, Rafsanjani made his first public appeal for the development of nuclear weapons, purportedly to defend Iran from any future WMD related attack.

Rafsanjani, however, favored an economic rapprochement with the West, rather than maintaining Iran's hitherto combative approach to Western dominated international system. Farzin Sarabi, for example, notes that after Ayatollah Khomeini's death in 1989, Rafsanjani emerged as the Iranian cleric most interested in economics and creating more entrenched mechanisms to allow for FDI, in order to help rebuild the war ravaged country. This faction, broadly referred to as Jameh-ye Ruhaniyat-e Mobarez-e Tehran (Association of Combatant Clerics of Tehran, or Ruhaniyat), was at odds with a more conservative faction, known as Majma-ye Ruhaniyoun-e Mobarez-e Tehran (Association of Combatant Clergy of Tehran, or Ruhaniyoun). The Ruhaniyat, according to Sarabi, was more amenable to economic changes that defied the basic principles of the Revolution to hasten economic growth, whereas the Ruhaniyoun favored the strict interpretation of the Khomeini's ideology, which therefore called on an economic model similar to that of ISI.[207]

Similarly, reformist President Mohammed Khatami, as well as his trusted ally, current President Hassan Rouhani, are affiliated with the Ruhaniyat political faction, whereas former Iranian President Mahmoud Ahmedinejad is affiliated with the Ruhaniyoun ideology. Accordingly, Iran's nuclear decision-making during these period of rule should help to discern how these two different political ideologies, which rest on a nuanced understanding of how the Islamic Republic must internationalize to ensure regime survival, impacted nuclear decision-making.

The Islamic Republic's renewed focus on nuclear energy began in 1982, but only began to garner more pronounced leadership attention in 1984. In a critical difference

[207] Farzin Sarabi, "The Post-Khomeini Era in Iran: The Elections of the Fourth Islamic Majlis," *Middle East Journal*, Vol. 48, No. 1 (Winter, 1994), pp. 89-107.

from the Shah's nuclear program, Iran launched the program at a time of historically low energy prices, and while Iran was fighting a resource intensive war with Iraq.[208] This willingness to finance a costly nuclear program during the 1980s; including the procurement of centrifuge components during the latter half of the decade suggest that economic concerns had little to do with nuclear decision-making in the Islamic Republic.

Khomeini oversaw the initial nuclear decision-making, but delegated elements of the Islamic Republic's procurement policy to trusted confidantes. In late June 1985, for example, Rafsanjani travelled to Beijing with a large delegation that included Foreign Minister Ali Akbar Velayati (currently a top aide to Ayatollah Khamenei) and Deputy Prime Minister Gholam Reza Aghazadeh (who would later be appointed president of the AEOI, where he served from 1997-2009). During this meeting, the two sides signed a secret nuclear cooperation agreement, which included a Chinese agreement to send to Iran tons of natural uranium (in violation of Iran's safeguards agreement with the IAEA).[209]

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[208] George C. Georgiou, "Oil Market Instability and a New OPEC," *World Policy Journal,* Vol. 4, No. 2 (Spring, 1987), pp. 295-312.

[209] The high-level visit had been months in the making and focused on bolstering technical and economic cooperation and securing China's participation in a slew of infrastructure related projects. At the time, however, neither Iran nor China announced that they had concluded a secret nuclear cooperation agreement. The agreement, according to John Garver, included provisions for the sale of four small teaching and research reactors, a sub-critical assembly using natural uranium fuel moderated by light water, a sub-critical assembly using natural fuel using a heavy water moderator, and a 27 kw miniature neutron source using less than one kg of highly-enriched uranium for the Isfahan nuclear facility. The small research reactors were likely designed to take the place of either a French or Belgian research reactor that Etemad had originally envisioned operating at the Isfahan site. Despite not announcing the nuclear cooperation agreement, all of the research reactors were declared to the IAEA. See: John W. Garver, *China and Iran: Ancient Partners in a Post-Imperial World* (Seattle: University of Washington Press, 2006), pp. 143-144; "Tehran Views Hashemi-Rafsanjani's PRC Visit," *Tehran International Service,* Daily Report, South Asia, FBIS-SAS-85-129, July 5, 1985.

One year later, in 1986, Khomeini dispatched a delegation, comprising President Khamenei, Foreign Minister Velayati, and Construction Jihad Minister Bijan Zangenh, to Pakistan for discussions about procuring the front-end of the fuel cycle.[210] These initial negotiations - which were initially overseen by Khamenei - ended in 1987 with the conclusion of a formal nuclear cooperation agreement stipulating inter alia for Pakistani nuclear scientists to train a contingent of Iranian nuclear scientists at the Pakistan Institute of Nuclear Science and Technology.[211]Iran's negotiations with Pakistan did not result in the procurement of centrifuge technology. However, they do appear to have led to direct negotiations with the AQ Khan network and the conclusion of a deal for centrifuge schematics, equipment for a centrifuge facility, the list of illicit suppliers in Europe, the Middle East, and East Asia, as well as the aforementioned document detailing the construction of nuclear pits.

According to Iran's declaration to the IAEA, "the decision to acquire centrifuge technology was taken by the President of the AEOI [Reza Amrollahi] and endorsed by the Prime Minister of Iran [Mir-Hossein Mousavi]." The Islamic Republic provided the agency "with a copy of a confidential communication from the President of the AEOI to the Prime Minister, dated 28 February 1987, which also carried the Prime Minister's endorsement, dated 5 March 1987. In his communication, the AEOI President indicated that the activities "should be treated fully confidentially."[212]

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[210] *Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of the Proliferation Networks* (London: International Institute for Strategic Studies, 2007), p. 66; "Khamenei submits report to Khomeini," *Tehran Domestic Service*, Daily Report, South Asia, FBIS-SAS-86-015, January 23, 1986.
[211] "Yaqub Khan, Velayati Meet," *Islamic Republic News Agency*, as published in Daily Report, Asia, FBIS-SAS-86-009 on 13 January 1986.
[212] GOV/2008/4.

Tehran's actions in 1985-86 underscore the level of governmental support that was given to the development of the enrichment program. Indeed through out Rafsanjani and Khatami's tenure in office (1989-1997; 1997-2005) support for the AEOI's enrichment program remained strong. These dynamics suggests that Iran's leaders supported the nuclear program, regardless of their understanding of how best to govern the country. As such, one can tentatively conclude that both the Ruhaniyat and Ruhaniyoun factions' understanding of Iran's right to pursue enrichment is similar, if not identical. The key difference, according to the data, is the approach to weapons related experiments.

Iran's weapons specific work began in 1988/1989, but appear to have been hindered by Iran's inability to produce specialized centrifuge components.[213] Therefore, much of Iran's weapons specific work only began in 1999: the same year that the AEOI first successfully introduced UF6 into a centrifuge cascade at the Kalaye electric plant (and during a time when Khatami was in office).[214] The bulk of the weaponization experiments began in 1999 and continued up until 2003, before Khamenei is reported to have issued a "halt order," after the August 2002 revealing of the Islamic Republic's

[213] The AEOI outsourced the manufacture of rotating components of its centrifuges to a subsidiary of the Defense Industries Organization (DIO) - a controlling entity for numerous defense companies working under the direction of MODAFL. See: "The Physics Research Center and Iran's Parallel Military Nuclear Program," Institute for Science and International Security, ISIS Report, February 23, 2012, available at: http://isis-online.org/uploads/isis-reports/documents/PHRC_report_23February2012.pdf; United Nations, "Individuals and Entities Designated as Subject to the Travel Ban, Travel Notification Requirement, and Assets Freeze Pursuant to Resolution 1737 (2006) of December 23, 2006, 1747 (2007) of 24 March 2007 and 1803 (2008) of March 3, 2008," Security Council Committee established pursuant to resolution 1737 (2006), available at: http://www.un.org/sc/committees/1737/pdf/1737ConsolidatedList.pdf..

[214] The AEOI has told the IAEA "that a limited number of tests, using small amounts of UF6, had been conducted in 1999 and 2002 at the Kalaye Electric Company workshop." See: GOV/2004/83, p. 8.

hitherto clandestine nuclear program. The reasons for the "halt order" help to elucidate the way in which the split between factions in Iran influence nuclear decision-making; including the likelihood that much of the Iranian bureaucracy was unaware of the weapons related work being conducted at Lavizan Shian, which was destroyed in line with the "halt order".[215]

While there is no direct evidence citing Khamenei's direct control over the program, François Nicoullaud, France's ambassador to Tehran from 2001 to 2005, believes that it was Rouhani who issued the 2003 order to halt Tehran's weaponization work. At the time when the program was halted, Rouhani was Iran's lead negotiator with members from the EU/3 (Britain, France, and Germany). The August 14 revelations prompted Tehran to undertake a serious review of its nuclear policies.

According to Rouhani, Khameni appointed him to bring "all issues involving the nuclear case ... under one person's authority" and his "orders be mandatory for all organizations related to the case." Khatami and his allies in the foreign ministry appealed for prudence and lobbied for Iran to be as forthcoming as possible about its previous nuclear activities, so as to prevent the referral of its case from the IAEA Board of Governors to the United Nations Security Council. Rouhani was tapped to lead this effort. The Rouhani/Khatami approach was a source of consternation within Iran and was resisted by the AEOI and other harder line elements; including the director of the weaponization plan, Mohsen Fakhrizadeh, who during these bureaucratic discussions, reportedly authorized a test of Iran's R265 shock implosion generator using a substitute

[215] The backdating of the halt order coincides with the beginning of the destruction of the Lavizan-Shian site, which began sometime after August 2003 according to open source satellite imagery and was concluded sometime after March 2005. The site has since been completely razed and replaced with a park.

material for uranium to test the uniformity of the shock wave – and thereby simulated the detonation of Iran's nuclear device.[216]

In 2003, however, the Rouhani/Khatami favored approach appears to have gained the endorsement of the Supreme Leader. According to Rouhani, he resisted the appointment but changed his mind after Khatami and the Supreme Leader personally intervened in the matter. This in turn suggests that Khamenei endorsed the Khatami-led approach, albeit with some noteworthy caveats. Rouhani worked with a committee dubbed the "Council of Heads," which included Ali Larijani, Velayati, intelligence minister Ali Younesi, and Aghazadeh.

The group was empowered to make "important and strategic decisions" like whether to talk to Europe, and the extent of Tehran's cooperation with the IAEA and its insistence on enrichment as a redline.[217] After Tehran and the EU-3 (France, Germany, the United Kingdom) reached an interim agreement for Iran to freeze its conversion program in 2003, Rouhani is alleged to have "issued a general circular asking all Iranian departments and agencies, civilian and military, to report in detail about their past and ongoing nuclear activities." However, according to Nicoullaud, "what Rouhani and his team were encountering was learning exactly what was happening in a system as

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[216] GOV/2011/65, annex, p. 9. This dissertation derived the mass calculation of the RDX/TNT explosives from comments made in Jeffrey Lewis, "Detonation Chamber at Parchin," *Arms Control Wonk*, May 24, 2012, http://lewis.armscontrolwonk.com/archive/5232/detonation-chamber; According to information provided to the IAEA, the testing of the R265 system involved evaluating the uniformity of the time of arrival of the detonation front, which is measured at the inner surface of 50 kilograms of composition B hemispherical explosive charge located inside the aluminum hemisphere. See: Albright et al, "ISIS Analysis of IAEA Iran Safeguards Report."

[217] "Nuclear case from beginning to end in interview with Dr. Hassan Rouhani (Part 1): We are testing Europe," *Keyhan,* July 26, 2005, FBIS Translated Text.

secretive as Iran's."[218] If the assertion is true, then the "halt order" must also have been approved by Khamenei.

In fact, Rouhani's account of the "Council of Heads" decision-making process suggests a more complicated picture than the one Nicoullaud described. Rouhani indicates that before signing the final Paris Agreement with the EU-3, the draft text, which was negotiated by the Foreign Ministry, had to be sent to the Council of Heads for final approval; and, during the process of giving the final approval, the group agreed "that [Iran] should accept the suspension voluntarily, so that [it] would have control over its time."[219]

It appears as if the agreement on suspension was reached amongst the Council of Heads only after it was agreed that the suspension would be "voluntary" and that there would be a short timeline for the negotiations with the EU-3 to continue (6-12 months). The agreement, therefore, appears to have been a compromise that allowed for the AEOI (Aghazadeh) - which took a hard line approach - to continue with its research. On the weapons side, the decision also allowed the AMAD to reconstitute and continue its research albeit without direct access to an alleged second fuel cycle.[220] Indeed, the AMAD plan has since transformed into the Organization of Defensive Innovation and Research (Sazeman-e Pazhuhesh va Nowavari-ye Defaie, or SPND) and reportedly maintains an office near Malek Ashtar University, dubbed the Mojdeh site.

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[218] François Nicoullaud "Rouhani and the Iranian Bomb," *New York Times,* July 26, 2013, http://www.nytimes.com/2013/07/27/opinion/global/rouhani-and-the-iranian-bomb.html.
[219] "Nuclear case from beginning to end."
[220] *Ibid.*

This short history suggests the following: First, Rouhani and Khatami (who was serving as President) did not know about key elements of Iran's nuclear program, including the weapons related work. Second, the key reason for the "halt order" was the threat of referral to the UNSC, rather than any normative related constraint, or the method of internationalization preferred by Iranian leaders. Third, Khamenei was the key decision-maker, but did make decisions based upon the input of key factions. These factions included hardline elements (the AEOI, represented by Aghazadeh and, presumably, Fakhrizadeh) and more outward looking leaders, perhaps best represented by Rouhani and Khatami. In the end, the Supreme Leader opted for compromise; choosing to "freeze" (but not halt) enrichment during negotiations, whilst also refusing to close the weapons related bureaucracy. In other words, Khamenei chose a middle ground that balanced one faction within the bureaucracy's demands against another.

Iran has maintained this approach ever since, albeit with a more hardline approach taken during the rule of Mahmoud Ahmedinejad. The key take-away, therefore, is that decision-making about the program before the revelation in 2002 was largely independent of the Ruhaniyat vs. Ruhaniyoun debate about Iran's orientation vis-à-vis the international community. This would therefore suggest that the unit of analysis when discerning how states make nuclear decision-making should be the individual, with special attention given to how key people within the bureaucracy view nuclear issues.

For Turkey, the post-1980 government sought to use nuclear energy as a vehicle hasten the privatization of the country's state-owned electricity utilities. These efforts were hampered by Turkey's poor economic state, as well as a lack of project finance, which resulted in the institution of a new financing model, known as Build-Operate-

Transfer (BOT). This financing provision was based on Ankara's experience with ASEA-Atom and Stal-Laval, but only formally codified into law in 1983. Specifically, BOT envisioned the nuclear vendor providing 100 percent of the financing for construction, in addition to agreeing to operate the reactor for up to twenty years. Ankara then proposed that the state-owned energy utility would purchase a guaranteed amount of electricity produced at a fixed-rate, over some 15-20 years, before the reactor was transferred to a local Turkish firm, which would take over the operation of the plant. Thereafter, the Turkish vendor would pay a percentage of the profits to the foreign vendor during the reactor's service life (some fifty to seventy years depending on the particular reactor).[221]

In 1984, Turkish President Turgut Ozal articulated his approach to nuclear energy, calling BOT the deal a "a sweet package" and identified Turkey's energy sector "the most trustworthy area" for foreign investment in the country.[222] Similarly, a representative from ENKA, a large Turkish energy conglomerate involved in the nuclear tender at the time, described the financing model as "beautiful" because the "government [would] pay only if the reactor works." Most importantly, the new financing arrangement would allow the Turkish government to present the $2 billion as a trade transaction rather than a capital outlay, thus contributing positively to the country's current account deficit figures – and therefore contributing to Turkey's overarching efforts to attract FDI.

[221] In BOT arrangements "the conclusion of the agreement ultimately came down to the commercial and financial considerations, rather than the technical elements." See: Robert L. K. Tiong, "BOT projects: Risks and securities," *Construction Management and Economics,* vol. 8, no. 3 (Summer, 1990), p. 315.
[222] Ann Taboroff, "Turkey Trying to Negotiate Akkuyu Financing by December," *Nucleonics Week,* vol. 25, no. 42, October 18, 1984.

Moreover, as part of the Turkish arrangement, Ankara called on vendors to cover the interest costs without a governmental off-take guarantee.[223]

Between 1984 and 1986, Turkey was negotiating with Germany's KWU and Canada's AECL for the sale of a reactor for the Akkuyu site. As of 1986, both companies had agreed to provide 100 percent financing, albeit with one key demand: Turkey's state-owned Turkiye Elektrik Kurumu taking an equity share in the local project company. KWU demanded that TEK take a 49 percent stake in the project company, whereas AECL only demanded a 40 percent ownership stake for the Turkish utility.[224] In an indication of the role project financing played in Turkish nuclear decision-making, an unnamed Turkish source told *Nucleonics Week* that "the one who offers the best financing package will get the project."[225] Ankara did eventually choose AECL, but the negotiations broke down in 1986, after AECL failed to convince third party lenders to provide project financing for the Akkuyu project.[226]

Different Turkish political parties have since pursued nuclear energy. The first post-1980 leader to do so, was Ozal, whose Motherland Party (ANAP) envisioned Turkey's transition from autarkic to export oriented capitalism. Thereafter, different

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[223] *Ibid.*

[224] Ann Taboroff and Ann MacLachlan, "AECL Ready to Consider Turkish Government's Terms for Akkuyu Project," *ibid,* vol. 25, no. 47, November 22, 1984; Ann Taboroff, "AECL Given Edge as Akkuyu Deadline Passes without Decision," *ibid,* vol. 25, no. 50, December 13, 1984.

[225] Ann Taboroff, "The Turkish Government Extends Akkuyu Negotiations with Both Competitors," *ibid,* vol. 26, no. 8, February 21, 1985.

[226] Ann Taboroff and James Branscome, "AECL Reaches another Major Milestone in Proposed Plant Deal with Turkey," *ibid,* vol. 26, no. 34, August 22, 1985; Ann Taboroff, "Atomic Energy of Canada Ltd. (AECL) has reached an agreement with Turkey," *ibid,* July 11, 1985; Ray Silver, "Akkuyu Financing Guarantees Being Sought from Three Nations," *ibid,* vol. 26, no. 24, June 13, 1985; Carol Reed, Thomas Goltz, Ray Silver, and Mark Hibbs, "Turks say AECL Deal off for Akkuyu Bay, Talks Open with KWU," *ibid,* vol. 27, no. 50, December 11, 1986.

Turkish politicians that ascribe to different political ideologies pursued a similar strategy. These politicians included Suleyman Demiral and Tansu Ciller from the True Path Party (TPP), Mesut Yilmaz from ANAP, Necmettin Erbakan from the Islamist Refah Party (RP) and current President Recep Tayyip Erdogan from the conservative Justice and Development Party (AKP).

These parties all share a commitment to export oriented capitalism, but differ in how they go about using international norms to internationalize. The True Path Party shares certain similarities with both the AKP and ANAP, albeit while describing themselves as sosyal devletci (Social statists). This self-description was intended to differentiate the party from ANAP's intense focus on privatization and was meant to evoke a comparison to Adnan Menderes' Democratic Party (In power from 1951-1960). To this end, TTP retained an interest in retaining elements import-substitution, as well as state owned enterprises. Refah advocated for a near break from the Western economic system, in favor of a rival alternative economic system with neighboring Muslim majority countries, dubbed the Developing-8. Domestically, this resulted in the promotion of an economic platform that ultimately favored the nationalization of industry, in order to harmonize the state's economic proactive with Islamic principles, including the abolition of interest.

Based on Solingen's hypothesis, these different governments should have approached the nuclear issue differently. In fact, many of Turkey's political parties remained inward looking, even after the introduction of Ozal's market reforms during the 1980s. Instead, all embraced a concept known as Build-Operate-Own (BOO); further suggesting that financing constraints have driven Turkish nuclear decision-making since

the late 1970s. BOO is similar to the BOT financing scheme, but drops the demand that the vendor transfer the reactor to a local company. Instead, the foreign vendor is now required to operate the reactor in perpetuity, while also providing 100 perfect of the financing, in exchange for a power purchasing arrangement.

Ciller made the changes to Turkish law, after BOT prevented Ankara from procuring up to ten coal, gas, and hydroelectric power plants from foreign vendors. The decree was later suspended by Turkey's constitutional court, which then prompted the parliament to embark on a lengthy legislative process that culminated in the 1999 constitutional amendment that opened the door to privatization in the energy markets.[227] Despite these changes, Turkey's negotiations with vendors between 1996 and 1999 failed, due to continued concerns about project financing. On the Turkish side, every political party embraced the BOO approach, underscoring how on this one specific issue, Turkish political parties put aside their rhetoric and sought out ways to overcome the nuclear financing hurdle.

Turkey's AKP finally procured Turkey's first reactor in 2010. The terms of Ankara's agreement with Russia's Rosatom did not differ from Ozal's demands of AECL and KWU in the early 1980s. The AKP required that Rosatom take 100 percent of the project company, in exchange for a power purchasing arrangement that envisions the Turkish state paying 12.35 US cents per kilowatt hour for 70 percent of the electricity produced at the first two Akkuyu units, and 30 percent for the electricity produced at the

[227] S. Gurcan Gulen, "Electricity in Turkey: A Legal Battleground in an Ongoing Privatization War," *Power Economics,* December 31, 1998; Ulusoy and Oguz, "The privatization of electricity distribution in Turkey," p. 5025.

third and fourth units.[228] This arrangement envisions this arrangement being in place for 15 years; thereafter Rosatom will sell electricity at market rates through a Turkish utility, in exchange for a percentage of the profits from the reactor's electricity sales until it is decommissioned in 60-70 years.[229]

The AKP also concluded a similar arrangement with a consortium comprising Mitsubishi, Itochu, and GDF Suez in March 2013.[230] The deal differed considerably from the one concluded with Rosatom. To ensure the conclusion of the agreement with the Japanese led consortium, the AKP agreed that state utility EUAS would take a stake in the project company, before off-loading up to 50 percent of that stake in an initial public offering.[231] This key AKP concession is reminiscent of the demands made of Ozal by AECL and KWU in 1985, which therefore indicates that the pressure came from the supplier, and not the AKP government.

More broadly, in both cases, the vendor dynamics cast doubt on the viability of the BOO model. Rosatom, for example, is a state own entity that relies extensively on state subsidies to engage in risky projects abroad. For Japan, the nuclear industry was

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[228] "Turkey: electricity price decisive factor for nuclear plant bid," BBC Monitoring Service, Europe - Political, January 19, 2009; David O'Byrne, "Turkey plans its first nuclear plant under partnership with Russia," *Platts Global Power Report,* January 28, 2010.

[229] "Energy Ties Bind Together Turkey's and Russia's Nuclear Power Sectors," *Business Monitor Online,* May 13, 2010.

[230] "Itochu, Mitsubishi, GDF in Turkish nuclear plant bid," *Reuters*, March 5, 2013, http://www.reuters.com/article/2013/03/05/turkey-nuclear-idUSL6N0BX2PE20130305; "Mitsubishi Heavy, Areva have won Turkish nuclear plant deal - Nikkei," *Reuters*, April 3, 2013, http://www.reuters.com/article/2013/04/03/turkey-nuclear-mitsubishi-idUSL3N0CQ5ER20130403.

[231] "Turkey to own maximum 30 percent of nuclear power plant to be built by Japan," BBC Monitoring Service, Europe - Political, May 6, 2013; "Nuclear plants to help Turkey save $7.2 bn. in gas imports," *Anadolu Agency*, May 6, 2013, http://www.aa.com.tr/en/headline/173346--y; "Weekly Roundup," *Nuclear Intelligence Weekly,* vol. 8, no. 2, January 10, 2014.

eager to retain a foothold in the nuclear export market, after the Fukuishima disaster resulted in the shutting down of domestic nuclear power plants. Ankara has expressed an interest in a third nuclear tender, but financing will likely continue to be a serious impediment to the further development of Turkey's nuclear power program.

The BOO model that Ankara has implemented prevents the use of the reactor or ancillary systems to proliferate. Turkey has essentially outsourced the operation and maintenance of its nuclear reactors for project financing reasons. This means that even if Ankara were to change its approach to proliferation, it would then have to violate its agreement with the foreign vendor to use the reactor to derive fissile material. This scenario is entirely unlikely, and thereby introduces a hitherto never considered nonproliferation restraint: the combination of foreign financing and foreign operation of a nuclear power plant in a third country's territory.

Findings

When comparing Iran and Turkey's post-1980 nuclear decision-making, it is clear that the role of financing is an under-studied aspect in (non)proliferation scholarship. As a rentier state, Iran relied on its oil largess to finance the massive expansion of its nuclear program in 1973, and again was able to rely on its foreign currency reserves to sustain its nuclear program after the Islamic Republic restarted elements of the program in 1984. Compare this with Turkey, which lacked foreign currency reserves to finance large infrastructure projects. Ankara therefore needed to devise a unique financing arrangement to support its nuclear energy project. The project was intended to address Turkey's energy poverty, which exacerbated Ankara's greatest economic weakness: its large

current account deficit.[232] Turkey's financing, in turn, created another proliferation constraint beyond norms related to Turkey's adherence to the NPT. Beyond the normative constraint, Turkey's financing decisions mean that future reactors and associated infrastructure will be foreign owned; in addition, to being inspected by the IAEA.

Thus, when exposed to the same input, the two countries made different decisions, regardless of their approach to internationalization. For Turkey, the financing issue was the cause of its civil nuclear energy decision-making process, whereas the Islamic Republic compartmentalized its nuclear program. Both factions within Iran – those that favored an adversarial relationship with the West, compared to those that favored greater economic integration – have similar points of view about Iran's right to pursue nuclear energy. The key difference stemmed from the support given to the military program. After the program was revealed, Khamenei sought to split the difference between the Ruhaniyoun and Ruhaniyat and pursued a policy that sought to ensure that Iran retained its enrichment program, albeit while freezing the military program.

This divergent approach manifests itself in Iran's recent negotiations with the EU3+3 (The United States, United Kingdom, France, Russia, China, and Germany) to

[232] As two employees of Turkey's Central Bank put it: "Turkey's favorable balances of payment situation changed rapidly in the 1970s and a hidden fragility of the 1960s came to the scene: Dependence on energy imports ... Foreign exchange rate guarantees increased contingent liabilities of the public sector and advances to the Treasury from the Central Bank printing machines created a persistently high and volatile inflation. During this period, Turkey fell into a double-digit inflation trap." See: Yüksel Görmez and Serkan Yiğit, "The Economic and Financial Stability in Turkey: A Historical Perspective," (Paper presented at the Fourth Annual SEEMHN Conference, March 27, 2009).

resolve the decades old nuclear dispute about Iran's clandestine nuclear program. The moderate internationalizing coalition has pursued a consensus driven approach with the West, albeit while demanding that Iran retain some notional "right to enrich." Iranian hard-liners have a similar approach;[233] choosing for now to focus on rebuilding the economy. The critical difference between these two factions stem from the after-affect of any nuclear arrangement with the West: On one side, the deal is viewed as a platform to increase FDI and gradually integrate with more Western economic structure, whereas on the other, the deal is seen as a platform to decrease sanctions, which thereby will allow Iran to become more independent from the West.[234]

Taken together, the method and means of internationalization had little effect on Turkish and Iranian nuclear decision-making, suggesting that it is not the cause of nuclear

[233] According to Farzan Sabet and Aaron Stein, "The conservative scene, while more complex, underscores the tenuous consensus to negotiate. At the apex of the conservative pyramid is Supreme Leader Ayatollah Ali Khamenei. Despite serious reservations about negotiating with the United States, Khamenei has nonetheless called for 'heroic flexibility' during the EU3+3 talks. Moreover, subsequent to the drafting of the November 2013 Joint Plan of Action (JPOA), he called the Iranian negotiating team "children of the revolution" and criticized those who sought to label Foreign Minister Javad Zarif and other members of the negotiating team as 'collaborators' with the west. Ali Larijani, the influential traditional principalist speaker of the parliament, has also supported Iran's negotiating team. While acknowledging that there are differences of opinion on this issue, Larijani has nonetheless emphasized that 'on national interests there is a consensus' and that overall parliament 'supports the negotiations.' The same can be said of traditional principalist senior foreign policy adviser to the supreme leader and 2013 presidential candidate Ali Akbar Velayati, who has criticized the previous nuclear negotiating team led by the hawkish Saeed Jalili. Velayati explained, 'I did not accept the previous method of negotiations…the method which our negotiators pursue at present is a method which speaks to their experience in negotiations…we are assured of our work and our negotiators.' See: Farzan Sabet and Aaron Stein, "Iran's delicate nuclear consensus," Monkey Cage Blog, *The Washington Post,* May 29, 2014, http://www.washingtonpost.com/blogs/monkey-cage/wp/2014/05/29/irans-delicate-nuclear-consensus/.

[234] *Ibid.*

policy. Instead, key nuclear decisions stemmed from a combination of economic concerns, blended with the security element discussed in the previous chapter.

Input 3: Turkey, Iran and the Nuclear Taboo

There is a debate within nonproliferation scholarship about whether the humanitarian consequences associated with the use of nuclear weapons have resulted in a normative "taboo" against their use. Nina Tannenwald argues that the notion that nuclear weapons are usable during times of conflict has eroded considerably since the 1950s, when the United States proposed their use in multiple contingencies; including in Iran and Turkey.[235] Tannenwald argues that the taboo against nuclear weapons began to take shape after the Cuban Missile Crisis in 1962, before it was consolidated in the 1980s during the protests against the forward deployment of Pershing missiles in NATO states.[236]

This study compares Iranian and Turkish decision-making during these periods of times, with the intention of answering whether Iranian and Turkish leaders have internalized the nuclear taboo. And if so, did the emergence of this taboo result in changes to Turkish and Iranian nuclear policies; and ultimately result in a disavowal of nuclear weapons? In both Turkey and Iran, nuclear issues were not debated domestically by powerful constituencies capable of influencing policy debates. As such, both countries were deprived of one pathway to instilling an anti-nuclear norm: bottom-up societal pressure typical in much of the Western world.[237] In Turkey, Sinan Ulgen argues with

[235] Nina Tannenwald, "Stigmatizing the Bomb: Origins of the Nuclear Taboo," pp. 5-49.
[236] *Ibid*, p. 14.
[237] Jeffrey T. Checkel, "Norms, Institutions, and National Identity in Contemporary Europe," *International Studies Quarterly,* vol. 43, no. 1 (March, 1999), pp. 83-114

regard to the forward deployment of U.S. nuclear weapons and the creation of disarmament norms:

> the Turkish position on tactical nuclear weapons is also shaped by the fact that the question of nuclear weapons has not exactly been the subject of an internal debate in Turkey…the Green movement is politically weak, almost to the extent of being nonexistent. Remaining political parties have clearly prioritized the national security angle of the debate and have not developed an antinuclear platform. As a result there is no domestic pressure buoyed by political forces for the removal of these weapons from Turkish territory.[238]

Similarly, before the revelations about Iran's clandestine nuclear program, the approach to nuclear issues was framed within the Islamic Republic's emphasis on technological innovation, independent of the West. In this regard, the Shah's rhetoric surrounding nuclear energy differed little from that of post-Revolutionary leadership. For both, nuclear energy was seen as a platform to advance the country, conserve energy reserves with the intention of developing an upstream industry, and to gain independence from the West.[239] Both Etemad and Rafsanjani, for example, sought out nuclear cooperation from India, arguing that Iran "did not want to be dependent on the Western powers."[240] Like in

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[238] Sinan Ulgen, "Turkey and the Bomb," Policy Paper, Carnegie Endowment for International Peace, February 2012, p. 13, http://carnegieendowment.org/files/turkey_bomb.pdf.

[239] In January 1974 the Shah told the West German magazine *Der Spiegel* that "as soon as you start operating nuclear centers, we will start operating our own nuclear centers ... I will operate my own reactors." He went on to chastise Bonn for using Iranian oil to make profits from its petrochemical sector and so as to fund "beautiful autobahns." See: "Shah Gives View on Oil in *Der Spiegel*," *Tehran Domestic Service*, Daily Report, Middle East and Africa, FBIS-MEA-74-00, January 8, 1974,pp. K1-K9.

[240] In August 1982 Parliament Speaker Akbar Hashemi Rafsanjani led a parliamentary delegation (including today's president Hassan Rouhani) to New Delhi where they discussed nuclear cooperation, among other things, with Rafsanjani asserting that Iran "did not want to be dependent on the Western powers." In this he was effectively following in the footsteps of the Shah, who had signed a nuclear cooperation agreement with India (in February 1977), and whose "nuclear tsar" Etemad voiced Tehran's interest in getting "as much as it [can] from India, rather than rely too much on Western sources on this subject." See: "Rafsanjani Leads Delegation to India," IRNA in English, Daily

the case of the Ruhaniyoun and Ruhaniyat debate mentioned above, the differences between the two Iranian government comes down to tactics: The Shah favored "Super Turn Key" projects[241] to hasten the development of nuclear power, whereas the Islamic Republic sought to develop an indigenous industry through the manufacture of foreign origin components.

Thus, in both cases, the norms surrounding nuclear issues reflected that of the decision-makers who oversaw – with little external political interference – the development of Turkish and Iranian nuclear policies. For Turkey, national security officials, affiliated with the NATO desk at the Ministry of Foreign Affairs, make nuclear policy; resulting in a NATO/national security conceptualization of nuclear weapons. In 1970s Iran, the Shah and Etemad were responsible for nuclear policy. After the revolution, nuclear policy remained under the purview of regime elites, as evidenced by the delegation of nuclear matters to trusted Khomenei aides: Khamenei, Rafsanjani, Velayati, and Aghazadeh. As a result, both countries' norms differ considerably from European countries, like Germany, which has a very established and politically powerful anti-nuclear movement that influences the direction of nuclear policy.[242]

As explained in the previous chapter, Iran and Turkey's conception of nuclear weapons differed considerably during the 1950s and 1960s. For Iran, nuclear weapons were not seen as being vital to the defense of the country, whereas Turkish leaders bristled under the command and control architecture put in place after the forward

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Report, South Asia FBIS-SAS-82-15, August 11, 1982; "Nuclear Energy Cooperation Accord Signed with Iran," *Delhi General Overseas Service*, Daily Report, Middle East and North Africa, FBIS-MEA-77-038, February 25, 1977.

[241] David Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, pp. 34-36.

[242] Müller, "German National Identity and WMD Proliferation," pp. 1-19.

deployment of nuclear weapon in NATO states. After the Cuban Missile Crisis, both the United States and the Soviet Union undertook discussion to slow the arms race. On the American side, the incident galvanized on-going work to change the U.S. nuclear war plan and the concept of deterrence.[243] Up until the 1960s, the United States' SIOP (Single Integrated Operational Plan), was relatively "inflexible," in that it called for the use of much – if not all – of the American nuclear stockpile in a preemptive or retaliatory strike against a wide swathe of targets in the Soviet Union and China. As of 1962, U.S. Secretary of Defense, Robert McNamara, was eager for the U.S. to retain greater flexibility in the SIOP.[244]

This approach ultimately resulted in the reconceptualization of deterrence in the United States and the redrafting of the SIOP, which introduced the concept of counterforce. This new war plan called for the targeting of Soviet missile and bomber sites, while keeping a number of bombs in reserve. This would then allow for the U.S. to de-escalate the situation, before both sides' total arsenals were launched. For Ankara, the move away from SIOP-62 to SIOP-63 was a source of tremendous concern, owing to Ankara's persistent concern that the United States would "sacrifice Ankara for Washington" during times of tension with the Soviet Union. For NATO, the U.S. described its new nuclear war plan as war planners greater flexibility "to control" the pace and scope of a nuclear war with the Soviet Union.

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[243] Scott Sagan, "SIOP-62: The Nuclear War Plan Briefing to President Kennedy," *International Security,* vol. 12, no. 1 (Summer, 1987), pp. 22-51.
[244] Fred Kaplan, *The Wizards of Armageddon* (New York: Simon and Schuster, 1983), pp. 248-263.

For Turkey, the problem was more nuanced. The concern in Ankara was that in any notional conflict over Berlin[245], the United States would resist the use of nuclear weapons at the outset of the conflict, owing to concerns about the Soviet missile systems/bomber proximity to Turkish territory. This approach, in turn, meant that the actual "red-line" for the use of nuclear weapons remained ill-defined; raising the possibility that the defense of Turkey could be sacrificed in the event of a Soviet invasion, in order to save Washington from nuclear attack.

To resolve this issue, Ankara pursued two interrelated policies: First, Turkey resisted signing the NPT; Second, and relatedly, Turkey pushed for greater authority to use nuclear weapons, independent of the order being given by NATO leadership in Brussels. With regards to the former, Ankara maintained this posture up until the late 1970s; as for the latter, Turkey supported the controversial forward deployment of Pershing missiles in Europe in as early as 1978. Much of Europe, by contrast, resisted the Pershing deployment; resulting in massive street protests and the further empowerment of a strong anti-nuclear movement on the continent. Turkey, during the 1980s, did not have a similar protest movement, which meant that politicians never did have to address Ankara's nuclear status. (To be clear, Turkey never hosted the Pershing missile.)

Ankara's approach to nuclear weapons only began to change in 1991, after the end of the Cold War. In response to the collapse of the Soviet Union, Turkey, beginning in 1995, reevaluated its own nuclear posture. Ankara, however, has yet to completely rule out the use of nuclear weapons and continues to support the forward deployment of

[245] Francis J. Gavin, "The Myth of Flexible Response: United States Strategy in Europe during the 1960s," *The International History Review,* vol. 23, no. 4 (December, 2001), pp. 847-875.

nuclear weapons. Ankara argues that nuclear weapons are an important component of the NATO alliance's emphasis on burden sharing; pointing to the fact that 16 of the 28 members participate in the nuclear mission. Turkey has, however, downgraded to the lowest level of readiness, which means that it would take a "few months" to re-train pilots to carryout the nuclear mission.[246] As of 2015, Turkey remains committed to the nuclear mission and played an active role in drafting NATO's most recent Deterrence and Defense Posture Review (DDPR), which regards nuclear weapons as "a core component of NATO's overall capabilities for deterrence and defense alongside conventional and missile defense forces."[247]

Turkey's approach to nuclear weapons echoes that of the NATO alliance's assumption that "circumstances in which any use of nuclear weapons might have to be contemplated are extremely remote." Nevertheless, this statement implies that there are contingencies to use nuclear weapons, further suggesting that Ankara has yet to fully internalize the conception of a nuclear taboo, and indeed has plans for the weapons' use (no matter how remote).[248] Added to this is Ankara's support this posture, which again differs from that of Germany; underscoring the divergence in norms and conceptions of the bomb, even amongst NATO allies that host U.S. tactical nuclear weapons.[249]

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[246] Author interview with a former NATO official involved in the drafting of the DDPR, Istanbul, Turkey, March 3, 2015.

[247] Deterrence and Defence Posture Review, North Atlantic Treaty Organization, May 20, 2012, http://www.nato.int/cps/en/natolive/official_texts_87597.htm.

[248] In November 2014, Turkish F-16s participated in NATO's "Steadfast Noon" exercise, which simulates nuclear strikes. See: David Cenciotti, "[Photo] Operation Steadfast Noon," *The Aviationist,* 14 November 2014, http://theaviationist.com/2014/11/15/steadfast-noon-2014-exercise/.

[249] For an overview of Germany's NATO nuclear posture, see: Andrea Berger, "A Tornado in a Teacup? Examining Germany's Alleged Nuclear Strike Aircraft

Compare this to Iran's nuclear policies both before and after the Islamic Revolution. As Sepehr Zabih, writing in 1970 notes, the Shah was "de facto non-aligned," rather than a staunch Western ally in the mold of Turkey.[250] As for the nuclear weapons issue, the Shah dismissed the notion of nuclear weapons use to defend the Zagros line in 1959. This approach to nuclear weapons was reflective of Iran's unique conception of security. As Zabih notes, Iran's most pressing security concerns related to Arab nationalism spreading in the Middle East. Thus, while the Soviet Union did represent a security threat, it was tangential to that of the spread of Arab nationalism, and therefore a problem that could be managed through deft diplomacy and playing the two super-powers off against each other.[251]

The Islamic Republic broke with Iran's hitherto strong military and industrial relationship with the West, in favor of an anti-western policy, premised on a combative relationship with the United States. As part of this new foreign policy outlook, Ayatollah Khomeini cancelled significant aspects of the Shah's nuclear program and placed Fereydun Sahabi, a geologist with no nuclear related expertise, in charge of the AEOI. Sahabi's father, Yadollah, was serving as the minister of revolutionary affairs in the new cabinet; suggesting nepotism and ideological loyalty were the principles reasons for Ferydun's appointment.[252] Between 1979 and 1982, Iran's nuclear program atrophied;

Modernisation," RUSI Analysis, Royal United Services Institute, September 7, 2012, https://www.rusi.org/analysis/commentary/ref:C5049CC5E5A166/#.VPhAVULvZUQ

[250] Sepehr Zabih, "Iran's International Posture: De Facto Nonalignment within a Pro-Western Alliance," *Middle East Journal*, vol. 24, no. 3 (Summer, 1970), pp. 302-318.

[251] Ibid, pp. 314-1316.

[252] "Bazargan's Comments on Division of Authority in Country," *Le Monde*, in Daily Report, Middle East and Africa, FBIS-MEA-79-042, February 28, 1979, pp. R9-R14.

owing to the mass exodus of trained personnel,[253] and a limited focus on maintain a small uranium conversion program at Isfahan.[254]

As noted in the previous chapter, the Islamic Republic reviewed Iran's previous Treaty obligations, and ultimately chose to remain an NPT member, despite the widespread feeling that the Treaty was discriminatory.[255] Moreover, after the first Iraqi chemical weapons attack began in 1983, the Islamic Republic's first policies emphasized collective action, either through the IAEA, or via bilateral talks with European countries. Ultimately, the nonproliferation community's failure to stem the attacks, combined with the security considerations mentioned in the previous chapter, pushed Iran to proliferate.[256] Thus, rather than embrace any set of normative prohibition against the use

[253] After the 1979 revolution, thousands of Western trained academics left Iran. After assuming power, Khomeini oversaw a so-called Cultural Revolution whereby universities were closed for three years (1980-83) while their curriculum was being purged of content deemed to be antithetical to the tenets of the revolution. The mass exodus had a noticeable impact on Iran's scholarly output. In 1975, for example, Iranian scientists published 305 ISI-recognized publications in scholarly journals. In 1978 the number of scholarly publications grew to 450, before dropping to 384 1980 and to 111 in 1985, when the residual after effects of the academic exodus had all but diminished. See: Farhad Khosrokhavar & M. Amin Ghaneirad, "Iran's New Scientific Community," *Iranian Studies*, vol. 39, no. 2 (June 2006), pp. 253-267; Farhad Khosrokhavar, "Iran's New Scientific Community," in Ali Gheissari (ed.), *Contemporary Iran: Economy, Society, Politics* (New York: Oxford University Press, 2009), pp. 211-218.

[254] As early as 1981 the AEOI began to experiment with uranium conversion and reduction. Conversion refers to the further purification of uranium yellowcake for enrichment or fuel fabrication. See: *Iran's Strategic Weapons Programmes: A Net Assessment,* pp. 56-58.

[255] Author interview with Ali Ashgar Soltaneih, Istanbul, November 3, 2013.

[256] With regards to Bushehr, Iran sponsored an IAEA resolution to condemn Iraqi attacks on the reactor site. See: "'Victory' Over Iraq at IAEA Meeting Lauded," *Tehran IRNA,* as published in Daily Report, Near East & South Asia, FBIS-SAS-85-190, October 10, 1985, p. I5.

of nuclear weapons, Iran had settled on a policy of proliferation, arguably because the government had concluded that there was no taboo against the use of WMD.[257]

This resulted in the tasking of top-level officials to procure the front-end of the fuel cycle. Outside of the Islamic Republic's public emphasis on the construction at Bushehr, the efforts to mine for uranium, and low-level conversion experiments at Isfahan, the issue of nuclear enrichment was not debated by the public at large. The debate about the Islamic Republic's civil nuclear program only truly began after the program was revealed. The issue, however, was framed within a heavily controlled media environment and ultimately framed within the unfolding debate between the two broad sections of Iranian politics: Ruhaniyat vs. Ruhaniyoun.

This has resulted in a general consensus about Iran retaining its right to enrich, with the policy disagreements stemming from how best to resolve Iran's conflict with the West. With regards to the nuclear taboo, Ayatollah Khamenei is reported to have issued a Fatwa banning the development or use of WMD. The Fatwa is a source of considerable controversy and its origins are beyond the scope of this dissertation.[258] In any case, the supposed issuance of the Fatwa is tangential to the evidence that Iran conducted nuclear

[257] The best statement inferring a lack of faith in the nonproliferation regime came during Rafsanjani's speech in 1988, where he said: "It was also made clear that the moral teachings of the world are not very effective when war reaches a serious stage and the world does not respect its resolutions and closes its eyes to the violations and all the aggressions which are committed in the battlefield. We should fully equip ourselves both in an offensive and defensive use of chemical, bacteriological, and radiological weapons. From now own you should make use of the opportunity and perform this task." See: "Hashemi-Rafsanjani Speaks on Future of IRGC," *Tehran Domestic Service*, Daily Report, Near East & South Asia, FBIS-NES-88-195, October 6, 1988.

[258] For a comprehensive analysis of the Fatwa debate, see: Ariane Tabatabai, "Don't Misunderstand Khamenei's nuclear Fatwa," Arms Control for Regional Security for the Middle East, February 28, 2013, http://middleeast-armscontrol.com/2013/02/28/dont-misunderstand-khameneis-nuclear-fatwa/.

weapons specific experiments between 1999 and 2003, in addition to its dedicated procurement network to support this program starting in 1987. In both cases, norm formation stems from Iran's top-leaders, rather than the bottom-up.

Findings

Both Turkey and Iran have centralized policy-making structures that prevent the creation of norms from the bottom up. Instead, norms reflect those of the bureaucracies and leaders overseeing nuclear issues. As such, Turkey's approach to nuclear issues reflects that of NATO, whereas Iran's are a corollary of the leader's worldview. In turn, neither Turkey nor Iran has embraced the nuclear taboo; with Ankara retaining the capability to deliver nuclear weapons and Iran having sought to develop a nuclear capability between 1987 and 2003.

This lack of a nuclear taboo, in turn, raises new avenues for academic inquiry: How do centralized states, free from a strong anti-nuclear constituency, create nuclear norms? To what extent is a states' understanding of nuclear norms a corollary to individual perceptions about the value, or meaning of, certain the nonproliferation norms? Similarly, do individual perceptions of nuclear weapons shape state behavior in centralized states, with top down decision-making mechanisms? These questions, in turn, touch on the role of individuals in nuclear policy-making and how their specific conceptions of security, or standing in the world affect perception of nuclear weapons. Indeed, the evidence thus far suggests that perceptions of nuclear weapons/security threats/treaties/nonproliferation are indeed subjective, biased, and influenced by individual perceptions – and that these individual understandings of these issues drive policymaking in different countries.

To address these questions, this dissertation's final analytical chapter will explore this study's dependent variable (Iran and Turkey's nuclear decisions) on an individual level, to determine how specific individuals shaped Turkish and Iranian nuclear policy to address two questions: 1) Do similar states respond similarly to the same external inputs?; 2) What explains variations in nuclear decision-making?

Chapter 5: Nuclear Mythmaking and Powerful Leaders: The Role of Individuals

Turkey and Iran's nuclear programs began in the mid-1950s, after the U.S. announced its Atoms for Peace policy in 1953. At the outset of each country's negotiations with the United States, the two countries placed different priorities on the procurement of nuclear technology. For Turkey, the procurement of nuclear energy was a political priority, favored by the then Prime Minister, Adnan Menderes. The Iranian case, however, differs in that the Shah was disinterested in the negotiations, leaving them to a trusted advisor, Manouchehr Eqbal. As a result, Turkey was the first to sign a nuclear cooperation agreement with the United States, whereas the lack of political support for the agreement in Iran resulted in the slow ratification of the U.S.-Iranian nuclear cooperation agreement.

After the 1973 energy crisis, the Shah changed course, and prioritized the rapid development of nuclear energy. Tehran's rapid accumulation of foreign capital after the rise in energy prices, allowed for Iran to acquire a significant amount of nuclear equipment from a slew of western suppliers. Ankara pursued a similar strategy, but its dire financial situation, as well as political unrest, prevented the government from pursuing a program as ambitious as Iran's.

The key catalyst for Iran's policy change emanated from the upper echelons of leadership. During the 1970s, it was the Shah's prioritization of the program that resulted in its expansion. Similarly, after the Islamic Revolution, the Supreme Leader dictated the direction of the nuclear program; including the decision to proliferate in 1984. On the Turkish side, the direction of the program changed considerably in 1983, after the market reforms instituted by Prime Minister Turgut Ozal.

This chapter explores the role of individuals in nuclear decision-making to help determine how key decision-makers understood nuclear issues, and subsequently made policy. This chapter is seeking to determine whether individuals in similar states respond similarly to the same external inputs. The previous two chapters suggest that states – and therefore, individuals making policy – respond differently to similar inputs, raising the rather obvious question: Why is this case? To address this question, this chapter looks at the role of individuals to determine whether the differences in Turkish and Iranian decision-making stem from different individual conceptions about nuclear energy/nuclear weapons.

In doing so, this section tests the constructivist/psychological constructivist approaches to nuclear decision-making put forward by Jacques Hymans, Peter Lavoy, and Itty Abraham. Hymans, for example, has compared the decision to proliferate to a "leap of faith," stemming from the key decision-maker's "national identity conception." In other words, if a leader is an "oppositional nationalist," and thereby views his/her country as "being both naturally at odds with and naturally equal (if not superior) to a rival country (key comparison other)", he/she is more likely to proliferate.[259] Yet, Hyman's attempt to prove his hypothesis is problematic. To calculate a leader's national identity conception (NIC), Hyman's attempts to quantify deeply held beliefs by analyzing speeches to measure the leader's ratings on status and solidarity scales. Status quantifies and evaluates the leader's perception about the country's place and standing in the international community in relation to his key comparison other. Solidarity quantifies the

[259] Jacques C. Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy*, p. 229.

leader's perception of similarities and differences between his/her country and the rest of the world.[260]

The leader's score on the status and solidarity scales can be thought of as a numerical representation of his/her personal beliefs about his/her perception of the country's international standing in comparison to other countries, and whether or not he sees the world in black and white terms like "us" vs "them." A rating on the high end of the status scale suggests that the leader is more likely to proliferate. Conversely, a lower score suggests that the leader will seek out other ways to defend the country from a foreign threat. According to Hymans, "The best texts for understanding a leader's NIC are likely to be major regular scheduled speeches such as the 'the state of the union' address which are explicitly concerned with the overall nature and direction of the nation . . ."[261]

Data indicates that Iran's Ayatollah Khamenei is an oppositional nationalist and therefore will "want the bomb," i.e. he has a NIC that favors the development of nuclear weapons. Yet, when one code's former President Mahmoud Ahmedinejad's speeches at the United Nations, the combative former Iranian leader has an NIC score that indicates that he is "unlikely to go for the bomb, unlikely to resist the nonproliferation regime, and likely to seek out superpower guarantees."[262] The history, as well as associated archival

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[260] *Ibid,* p. 48.
[261] *Ibid*, pp. 50-52.
[262] The author used Hymans' methodology to code Ayatollah Khamenei's and former President Mahmoud Ahmedinejad's speeches. For this study, Khamenei's NIC was derived from a collection of speeches he gave throughout the country to "academics and elites" from 2006 to 2008. The format for these speeches are akin to town hall forums in American politics. Khamenei specifically lays out his vision for Iran, the country's international status, and the government's foreign and domestic policies. Based on this author's coding of Khamenei's speech acts, Iran's Supreme Leader is an oppositional

documents, suggests otherwise. This suggests two things: First, that a leader's NIC is dependent on a subjective interpretation of the statements made. The coding of speeches, for example, relies on the context and audience of the speech, as well as certain assumptions about what a leader means, when he/she refers to a key comparison other – the foreign actor referred to most in the speeches – in non-specific terms.

For example when Khamenei says, "The problem besetting our great nation before the victory of the Islamic Revolution did not lie only in the fact that the country's political officials were installed and dismissed by the aliens without the Iranian people's knowledge," "aliens" is coded as a generic foreign other, while "our great nation" was recorded as a wider self reference. The external actor references are based solely on Khamenei's explicit language and coded independently and only counted once in each paragraph. The Iranian leadership's tendency to use interchangeable terms like "global arrogance, arrogant powers, aliens, the colonialists, and the super powers" necessitates the making of assumptions about who it is that they are referring to, which could in turn alter the leader's NIC score – and therefore whether the final score will result in an NIC that suggests a preference for nuclear weapons or nonproliferation.

Second, the language used may, in fact, be dependent upon the setting in which the speech is given. As such, leader speeches at the United Nations compared to those given to the military will differ in tone. The speech may actually be the dependent

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nationalist and will "want the bomb." However, when the same process was used to code Ahmedinejad's speeches, this author determined that he had an NIC that results in the leader foregoing the development of nuclear weapons or technical autonomy, in favor of an alliance themselves with a nuclear power. This description is at odds with Ahmedinejad's actions and policies whilst in office.

variable, whereas the venue is the independent variable. This raises a potential methodological problem for scholars trying to replicate Hyman's work; leaving open the possibility that a leader's NIC scores may be dependent on an unrelated independent variable that has little to do with nuclear decisions. Indeed, when this author coded speeches from Ahmedinejad, the NIC differed when UN speeches were used, compared to speeches given to domestic audiences.

Similar to Hymans, Peter Lavoy argues that "a government is likely 'to go nuclear' when proficient and well positioned individuals who want their country to build nuclear bombs, exaggerate security threats to make the 'myth of nuclear security' more compelling."[263] According to this hypothesis, a country will pursue nuclear weapons only after a well-positioned person in the bureaucracy convinces the leader that they are critical for security. In this regard, Lavoy's argument is similar to that of Scott Sagan, who argued that one potential explanation for a state's nuclear decision stems from a powerful bureaucracy, pushing for either a civil nuclear program, or a nuclear weapons effort.[264]

This nuclear decision, according to Itty Abraham, was incorporated into the developing world's "fetishization" of nuclear science. As newly independent states, Abraham argues, developing countries (many of which were under colonial rule) were eager to use science to rapidly advance, in order to hasten their acceptance as an equal member in the world community. For these ideational reasons, Abraham argues India sought to use nuclear energy to signal technological and economic progress. State interest

[263] Peter R. Lavoy, "Nuclear Myths and the Causes of Nuclear Proliferation," *Security Studies,* vol. 2, no. 3/4, (Winter, 1993), p. 192.
[264] Scott D. Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," *International Security*, vol. 21, no. 3 (Winter, 1996-97), pp. 54-86.

in nuclear weapons is therefore an outgrowth of an unconscious urge to technologically develop – and thereby very much linked to how a state views its own place in the world vis-à-vis the more advanced/former colonialist powers in the West.

These three different theories hinge on individual perceptions of nuclear energy/nuclear weapons. These studies, however, do not address one of the factors that shaped Turkish and Iranian perceptions of nuclear energy: Western influence on the development of individual conceptions of nuclear energy/weapons. In the Turkish and Iranian cases, early perceptions of nuclear energy reflected those of the American experts that consulted with and helped to establish each country's nuclear energy program. Moreover, the cases of Iran and Turkey suggest that in highly centralized states, bureaucracies act at the behest of the leader, and thereby don't have much affect on state decision-making.

As such, Iran's nuclear program was beholden to the Shah and the support he gave to the program. The nuclear program was therefore relegated to a university level research program during the 1960s, before the Shah's interest in the program grew, resulting in the dedication of tremendous resources to develop an industrial nuclear program. In Turkey, by contrast, the centralization of nuclear decision-making tied the country's nuclear program to that of the Prime Ministry – and thereby to the person who held that office. Thus, when a Prime Minister who supported nuclear energy was in power, the program advanced. However, during times of domestic unrest, the program suffered. Thus, while Turkey's nuclear bureaucracy put forward its first plan to develop nuclear energy in 1965, the program was not authorized until the 1973 energy crisis.

These differences suggest that in centralized bureaucracies, the direction of the nuclear program reflects the preference of the leader, or the person put in charge of the day-to-day operation of the bureaucracy.

This chapter identifies key actors in Turkey and Iran's nuclear programs and compares their decisions to discern how different individuals responded to the same set of inputs. This allows for a direct comparison of the factors that shape inter-bureaucratic debates about nuclear issues; shedding more light on the reasons why different decisions are made in response to the same input. Furthermore, this approach helps to test the simple assumption underpinning much of nonproliferation scholarship: State X chose to pursue/forego nuclear weapons for Y reason. Therefore, when exposed to Y reason, other states will implement similar policies. However, substantial differences remain about why similar inputs result in different outcomes. Expressed as an equation, X (input) leads to Y (nuclear decision) resulting in Z (policy).

Input 1: Atoms for Peace: Early Conceptions of Nuclear Energy and Individual Decision-Making in Iran and Turkey

At the outset of the nuclear age, the Turkish and Iranian leadership adopted two different approaches to nuclear energy. The differences were linked to bureaucratic politics and the way in which the leadership exerted considerable influence on nuclear policy. As a result, the countries' early approach reflected the approach adopted by the leadership, rather than interested parties within the bureaucracy. This dynamic has continued up until the present, underscoring the line between individual perceptions of nuclear energy/nuclear weapons and policy making in Iran and Turkey.

Turkey first approached the United States in 1954 about concluding a nuclear cooperation agreement. At that time, Turkey was ruled by Adnan Menderes from the recently formed Democratic Party (DP). The DP's election (in 1951) ended the twenty-seven-year uninterrupted rule by the Republican People's Party (RPP), formed by Turkey's founding father Mustafa Kemal Ataturk (d. 1938). The winning party's political platform focused heavily on growing the economy and continuing Turkey's modernization efforts, though it had advocated the abolition of some secularist laws antagonizing the country's conservative districts.[265]

For the first four years of Menderes' rule the economy boomed, buoyed by the Korean War spending stimulus and an uptick in food exports. This, however, began to tax Turkish energy resources and by the mid-1950s the import of foreign energy sources accounted for 57 percent of Turkey's visible current-account-deficit triggering a severe economic crisis. With agricultural production flagging, inflation spiraling to new heights, and foreign currency reserves dwindling, Ankara faced problems paying for oil imports and food staples like wheat.[266] One option to ease this predicament was to decrease reliance on imported energy hence the government began building hydroelectric plants, in addition to a haphazardly articulated plan to benefit from nuclear energy. Another was to seek alternative energy sources and, indeed, Ankara and Washington began negotiations

[265] Feroz Ahmad, *The Making of Modern Turkey* (London: Routledge, 1993), pp. 108-109.
[266] William Hale, *The Political and Economic Development of Modern Turkey* (London: Croom Helm, 1981), pp. 90-91; "Memorandum of Conversation, Department of State, Washington, D.C., Subject: Interdepartmental Study on Turkish Economic Problems, 882.00/5-1855, 18 May 1955," in the United States Department of State, *Foreign relations of the United States, 1955-1957. Soviet Union, Eastern Mediterranean* (U.S. Government Printing Office, 1955-57), vol. 24, pp. 632-637.

for the supply of a small research reactor in 1954 - just a few months after Eisenhower's Atoms for Peace speech.

From the outset of negotiations, Turkish officials emphasized two key issues: Provisions for the training of Turkish students and speed. Ankara was eager to conclude the deal as quickly as possible, rather than being bogged down in details about the language included in the proposed nuclear cooperation agreement. In this regard, Turkey's negotiators were acting at the behest of Prime Minister Menderes, who maintained close control over the negotiations.

Ankara and Washington agreed to the draft text in April 1955 and the two sides officially signed the first Atoms for Peace nuclear cooperation agreement on June 10, 1955. While Turkey was the first to sign such an agreement with the United States, the archival evidence indicates that this was only due to the "Turkish government act[ing] promptly."[267] Turkey's nuclear authority, Turkish Atomic Energy Commission (TAEC) was created after the agreement was signed. The organization was established under the auspices of the Prime Ministry, with its funding coming from the Prime Ministry's budget, rather than directly allocated by parliament. As such, TAEC was not independent from the Prime Ministry, which thereby meant that the Prime Minister exerted considerably authority over the direction of the program.

With regards to the negotiations with the United States, this arrangement proved beneficial. Menderes believed in the value of nuclear energy; directing his government to prioritize the conclusion of the agreement as soon as possible. The United States helped

[267] Outgoing Telegram, Department of State, File no. 611.8297/5-255, May 2, 1955, General Records of the Department of State, National Archives and Records Administration, RG 59, Box 2553.

ease the negotiations, after offering to provide $350,000 to assist with the purchase of the first reactor; in exchange for Ankara providing some $250,000 for site construction and associated laboratory equipment.[268] TAEC's first duty after its creation in 1956 was to work with U.S. representatives from the Atomic Energy Commission to establish Turkey's nuclear program. However, Ankara suffered from a shortage of trained nuclear experts. This meant that there was not a trained cadre of influences from within the bureaucracy influencing the direction of nuclear policy, but rather a few key individuals who shaped the direction of Turkey's initial nuclear policy.

According to the United States' Department of State, "in general, Turkish educational, scientific, and technical [expertise] was quite limited." For example, only Ankara and Istanbul universities had nuclear-related doctoral programs. Istanbul Technical University had an MSC program and Bogazici had a BS program. At the University of Ankara, one professor, Dr. Besin Tanyal, would later select the reactor that Turkey eventually purchased. In order to come to terms on Ankara's nuclear needs, Washington began discussions with their Turkish counterparts to send an American scientist to review the reactor plans and to establish an atomic trainee program.[269]

Tanyal worked closely with Dr. Clifford Beck, a former scientist at Oak Ridge, who later established the first research reactor at North Carolina State University

[268] Incoming Telegram, Department of State, File no. 611.8297/7-2855, July 28, 1955, General Records of the Department of State, National Archives and Records Administration, RG 59, Box 2553. Furthermore, in an indication of the role financing played in early decision-making, a July 1955 Department of State telegram notes, "The Turkish Foreign Office, as well as participating agencies, including Robert College University [Bogazici University], are anxious to hear the details about the United States' plan to fund half of the construction costs of small research reactors." See: *Ibid.*

[269] Incoming Telegram, Department of State, File no: 611.8297/10-1555, October 15, 1955, General Records of the Department of State, National Archives and Records Administration, RG 59, Box 2553.

(NCSU). In 1955, Tanyal met with Beck, before selecting which reactor Turkey would purchase from the United States' American Machine and Foundry (AMF). After the April meeting, Tanyal told his American interlocutors that Turkey preferred a 1 MW boiling water reactor similar to the one in use of at NCSU and therefore signaled his intent to use the U.S. university program as a model for Turkey's first nuclear research center.[270]

In 1956, Tanyal approached Dr. Cavit Erginsoy – Turkey's TAEC representative – to further discussions with the AEC about Ankara's nuclear plans. TAEC and the AEC then went back and forth about the plans for the construction of Turkey's first reactor, with the Turks asking their American interlocutors to send a representative to Ankara for consultations. The Turkish government was particularly fond of Dr. Alvin Weinberg - director of Oak Ridge laboratory - and asked the AEC, on a number of occasions, to send him for consultations. This resulted in the United States dispatching Dr. Louis Roddis from the AEC in September 1956 and then Leonard E. Link from Argonne national laboratory in November 1957 to liaise about the reactor's construction.

Turkey then chose the firm American Machine Foundry (AMF) to construct a one-MW pool type research reactor at the Cekmece Nuclear Research and Training Center (CNAEM) outside of Istanbul. Reactor construction began in 1959, with it going critical for the first time on May 27, 1962. Thereafter, the United States' Brookhaven national laboratory assisted with the running of the Cekmece nuclear center, through a special lab-to-lab agreement. Brookhaven provided funding for Turkish nuclear research

[270] Confidential: Memorandum of Conversation, Department of State, File no: 611.8297/4-2655, April 26, 1955, *ibid.*

projects at the facility, whilst also participating in a training program for Turkish nuclear students in the United States.[271]

Turkey also received considerable nuclear training from British sponsored Baghdad-Pact nuclear research center; first based in Baghdad, and then Tehran after the 1957 coup in Iraq.[272] In a similar program to the U.S. supported Cekmece research center, the British Atomic Energy Authority "provided the Director and five other scientists out of the Institute's total complement of twelve staff members," to train scientists from the Baghdad Pact's member states in radioisotope production, as well as agricultural uses of nuclear technology.[273]

Western influence helped shape early Turkish nuclear decisions. Ankara was ultimately reliant on Western cooperation to supplement its technical expertise. As such, Turkey's early perceptions of nuclear energy were similar to that of their American counterparts. Turkey's particular fondness for Dr. Alvin Weinberg is noteworthy in this regard. Weinberg was an ardent supporter of nuclear energy, writing in 1954 that

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[271] "Report on the Cekmecek Nuclear Research Center, Airgram, Department of State, July 21, 1965, *ibid.*

[272] "Baghdad Pact Nuclear Training Center," *Science*, New Series, vol. 127, no. 3302 (April 11, 1958), pp. 806-807.

[273] The core curriculum focused on basic fields of nuclear physics including electronics, radiochemistry, and health physics. The regional staff were largely culled from biological sciences and cooperated closely with the British staff on the medical and agricultural applications of nuclear science. As of 1960, for example, the projects in progress were: Water-flow studies by radioactive labeling and tritium counting; testing of cement and of archeological specimens by beta-ray back scattering; solvent extraction and ion exchange work in solution chemistry; synthesis of labeled carbon-14 compounds; observation of cytological changes in plant grown under the influence of phosphate labeled with phosphorus-32; and a study of the food reserves of certain insects. See: H.A.C. McKay, "CENTO Institute of Nuclear Science in Tehran," *Nature,* vol. 186, no. 4724, (May 1960), p. 514.

progress on the development of a small reactor for submarines signaled the feasibility of the use of small reactors for power generation in remote places.

In addition, he proposed the idea of using a reactor based on the swimming pool type reactor that AMF would build in Turkey to produce power in remote localities. Weinberg believed "that a vigorously competitive business for supplying such power packages will develop... [and] doubtless we shall shortly see such devices being built for a lump sum on a competitive bid basis."[274] This enthusiasm for nuclear energy is reflected in Menderes' own statements; in particular, his government's early expectation that the reactor procured would serve as a platform to eventually produce nuclear power in remote areas that were economically underdeveloped.[275]

This approach resulted in Turkey's nuclear research program being to TAEC, which operated under the Prime Ministry. By contrast, Iran's early nuclear program was university based, and operated outside of government bureaucracy. The difference is related to the influence of key decision-makers. For Turkey, the program had the support of the Prime Minister, whereas in Iran, the early decisions were made by two men with links to the University of Tehran: Manoucher Eqbal and Mahmoud Hessabi.

Eqbal was one of the Shah's closest advisors; Hessabi has been dubbed the "father of Iranian physics," after he founded Tehran University in 1934. He also helped draft Iran's first nuclear wish list. In anticipation of Iranian interest in the Atoms for Peace program, the U.S. embassy in Tehran reached out to Hessabi to draft a statement of

[274] See: Alvin M. Weinberg, "Oak Ridge National Laboratory," *Science*, New Series, vol. 109, no. 2828 (March, 1949), pp. 245-248; Idem, "The Outlook for Industrial Nuclear Power - 1954," *American Scientist*, vol. 42, no. 3 (July, 1954), pp. 461-470.
[275] Incoming Telegram, Department of State, File no: 611.8297/10-1555, October 15, 1955, General Records of the Department of State, National Archives and Records Administration, RG 59, Box 2553.

hopes, plans, and facilities for the [planned] nuclear research center at the University of Tehran."[276] Eqbal first contacted the AEC to open discussions about nuclear cooperation in November 1955, but the Iranian government failed to prioritize the negotiations, which resulted in the delay of the beginning of substantive discussions for close to two years. Eqbal, however, appeared unaware of the legal provision governing the export of U.S. nuclear technology and, in 1956, began to proactively approach American foundations to provide support for a university nuclear research program.[277]

After a working visit to the United States, the U.S. ambassador in Tehran, Seldin Chapin, met with Eqbal and then with Prime Minister Hossein Ala to reemphasize that nuclear science cooperation required the conclusion of a cooperation agreement. Eqbal and Ala expressed an extreme interest in such an arrangement and inquired whether it would allow Iranians to be trained abroad in the nuclear field. With Chapin replying in the affirmative, Eqbal indicated that he "would inform the Shah today of [their] conversation."[278] As he explained on another occasion about the Iranian political process,

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[276] Incoming Telegram, Department of State, File no. 611.8897/11-1455, November 14, 1955, General Records of the Department of State, National Archives and Records Administration, RG 59, Box 2558.

[277] After a working visit to the United States in June 1956, Eqbal told Ambassador to Iran, Seldin Chapin, that he had been "promised a nuclear reactor for Tehran University" during the visit. The statement took the ambassador by complete surprise as he was unfamiliar with his interlocutor's negotiations with American foundations (Eqbal had actually prepared - likely in conjunction with Hessabi - a nuclear wish list that he took with him to the United States). Having cabled Washington for instructions, Chapin learned that Eqbal had not been promised a reactor but had only liaised with American officials about "the possibility of some foundation, such as Ford or Rockefeller, providing financing for specialized personnel for laboratory and nuclear studies at the University of Tehran." See: Incoming Telegram, Department of State, File no. 611.8897/6-156, June 2, 1956, *Ibid*; Outgoing Telegram, Department of State, June 6, 1956, *ibid*.

[278] Incoming Telegram, Department of State, June 23, 1956, *ibid*.; Memorandum of Conversation, June 23, 1956, *ibid*.

"the person who gets to the Shah last, receives his support."[279] Thus, while the Shah may have been absent from the early talks, no government funds for the nuclear purchases could be obtained without his authorization.

It was indeed this aloofness that accounted for the delay between the initial U.S.-Iranian discussions and the conclusion of an agreement. It was only in late July 1956 that the Iranian ambassador to Washington, Ali Amini, was authorized to send a formal letter to Secretary of State Dulles indicating a desire to begin negotiations on a nuclear cooperation agreement. The ambassador was informed that a draft agreement was being prepared and was presented with the actual text in September,[280] whereby he was peremptorily instructed by the Shah to have it signed. It is unlikely that Iran made any changes to the text of the agreement.

For "the best effect" Washington and Tehran agreed to delay the announcement until next winter (1957), when Tehran would host an exhibit for the peaceful use of nuclear energy under the auspices of the atoms for peace proram. The Shah agreed to make an opening statement where he would announce the conclusion of the agreement. Before the holding of the conference, the administration agreed to begin implementing the agreement as soon as it came into force. This, however, required the agreement to be mutually ratified before the March conference, and because of Congressional scheduling issues, the most likely date for the signing of the agreement was February 1957.[281]

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[279] Foreign Service Dispatch, Department of State, July 12, 1956, *ibid*.
[280] Embassy of Iran, Department of State, File 611.8897/7-1856, July 18, 1956 *ibid*; Outgoing Telegram, Department of State, File 611.8897/9-1356, July 27, 1956, *ibid*.
[281] Incoming Telegram, Department of State, September 13, 1956, *ibid.*; Outgoing Telegram, Department of State, File 611.8897/7-1856, September 18, 1956, *ibid*; Outgoing Telegram, Department of State, File 611.8897/9-1356, October 31, 1956, *ibid*.

The United States sent Iran the draft agreement in November 1956. Having received the document, Tehran agreed to a tentative signing date of November 23 and to simultaneous announcements by the Shah and the President Eisenhower. Yet it indicated its desire to make the announcement at the Atoms for Peace exhibition so as to achieve "maximum impact." In order to placate the Shah, the administration agreed that the announcement be postponed until December and that at the time of signing neither the Shah nor the President would make any public statements so as to ensure that the Shah would be able to announce the agreement in March. The agreement would then come into force at the same time as the atoms for peace exhibition.

Nevertheless, the Shah worried that news about the agreement would be widely reported as it was a matter of public record leading to the loss of the anticipated political gains. He therefore opted to delay the signing until March 1957 to ensure the maximum political capital from the signing ceremony,[282] though this meant that Iran would be unable to take advantage of the agreement until the agreement was ratified. In a further signal of the priority given to the ratification of the agreement, Tehran failed to take the final step to bring the agreement into force, which ultimately prompted representatives from American Machine and Foundry to prod their Iranian counterparts to exchange the necessary diplomatic notes with the United States to allow for cooperation to take place.[283]

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[282] *Ibid.*

[283] Iranian Embassy, Washington, DC, File 611.8897/2-459, September 12, 1959, *ibid*; Incoming Airgram, Department of State, File 611.8897/2-559, September 12, 1959, *ibid*; Office of Memorandum, United States Government, File no. 611.8897/3-2959, April 29, 1959, *ibid.*

The different approaches taken by Iran and Turkey demonstrate the value and problems of centralized nuclear decision-making. In the Turkish case, the support given to the program resulted in the prioritization in talks with the United States, and ultimately the rapid conclusion of the nuclear cooperation. For Iran, however, the Shah's interest in using nuclear technology for political gain delayed the signing of the agreement. Yet, rather than continue to use nuclear technology for political gain, the Shah's interest in the program waned during the 1960s. The program, therefore, remained limited to university level research, rather than the focus of a top-down political directive to hasten the development of nuclear energy. These early decisions also affected how each program was initially constructed. The government centric approach in Turkey resulted in TAEC overseeing much of Turkey's nuclear research. Iran's nuclear program, by contrast, was university centric, with much of the initial research being conducted at the University of Tehran.

Findings

Individuals in Turkey and Iran were both interested in concluding a nuclear cooperation agreement with the United States after the Atoms for Peace policy was first announced. The subsequent trajectory of each program was dictated by the support given by the leadership to the bureaucracy placed in charge of nuclear related issues. In Turkey, Menderes' support for the program hastened the conclusion of the nuclear agreement. Thereafter, the program relied on Turkey's few nuclear physicists, who turned to American experts to aid in the development of a government centric research center. As such, Turkey's nuclear research center is modeled on the program at North Carolina State University, which was under the direction of Dr. Beck. More broadly, Menderes'

enthusiasm set the tone for the pace of negotiation and ultimately created the foundation for the formulation of Ankara's initial approach to nuclear energy: a key technology to be mastered with the intent of using it to produce power.

One consequence of this approach, however, was that TAEC was placed under the auspices of the Prime Ministry. Thus, during times of political turmoil and Prime Ministerial upheaval, the program lost its main sponsor, and therefore its main advocate within the Turkish bureaucracy for the allocation of funds for potential nuclear projects. This is most evident during the 1960s, when TAEC concluded a study to procure a nuclear reactor (in line with Menderes' policy direction), but failed to find political support from the new administration, headed by the Justice Party's Suleyman Demirel.

The Shah differed from Menderes in that he paid little attention to the development of nuclear energy between 1955 and 1972, once he derived the political benefits of announcing the atoms for peace program in 1957 (and then lost interest in its direction for much of the 1960s). The lack of a top-down government directive resulted in Iran's early program being largely confined to university level research. This early emphasis on university level research is reflective of the person placed in charge of the nuclear program, Manoucher Eqbal. However, due to the lack of top-level support the construction of the reactor at Tehran University suffered during the 1960s, due to disagreements about payment for both the construction of the reactor and to the local Iranian contractor in charge of building the actual buildings.

The data suggests that neither Turkey nor Iran fetishized nuclear technology in the 1960s/1960s, as a means with which to demonstrate technological advancement. Moreover, contrary Sagan's hypothesis, the bureaucracies in Iran and Turkey remained

beholden to directives from the top leadership – and not the other way around. This dynamic of the bureaucracy taking its cues from the top is clearly reflected in the case of Iran after the 1973 oil crisis, and then the 1984 decision to proliferate. The Shah was disinterested and even acted as an impediment to the development of nuclear energy, owing to his desire to time the signing of the nuclear cooperation agreement to maximize his personal popularity.

In Turkey, the nuclear bureaucracy has never been independent of the Prime Minister, which thereby limits its autonomy, and its ability to impact policy to other potential interested parties, like the Parliament or even the military, should Turkey have considered developing a nuclear weapon. The evolution of each bureaucracy suggests an inability, in the words of Lavoy, to create a "nuclear mythmaker" from within the nuclear establishment. The role of nuclear mythmaking, particularly in Iran during the 1970s, stemmed from the Shah, rather than a person within the bureaucracy. Indeed, during the 1960s, the two men in charge of the program were eager for university type research, rather than a large-scale civilian program, or a nuclear weapons program.

In the case of Turkey, the "mythmakers" came from the United States' AEC, with Weinberg and Roddis serving as key advisors for early Turkish nuclear bureaucrats/scientists. Yet, even while Menderes did express similar arguments to those made by Weinberg and Roddis about the value of nuclear energy, the implementation of this vision remained beholden the leader, which as indicated remained apathetic to the development of nuclear energy up until 1972. The catalyst for change, in the case of Iran, stemmed from the Shah's intense interest in the program beginning in the early 1970s. Similarly, one of Turkey's greatest weaknesses during the 1970s was political turmoil,

which subsequently hindered the procurement of reactors from Sweden. Together, the data suggests that in highly centralized political systems, the bureaucracy's freedom of action is limited; beholden to the leaders political directives; and hamstrung during times of political/economic crises.

The leader's personal feelings about nuclear energy, therefore, are of paramount importance to understanding a state's nuclear policy. This suggests that political outcomes depend on a leader's conception of the "input" in centralized political systems; resulting in different outcomes when similar states are faced with the same input. This suggests that similar leaders make similar nuclear decisions, particularly as it pertains to nuclear weapons. More broadly, most leaders choose not to proliferate, further suggesting that most world leaders, regardless of cultural and political differences, ultimately make the same decision: not to pursue nuclear weapons. This fact, in turn, makes the Iranian leadership's post-1979 decision-making all the more valuable, owing to its historic rarity; particularly as it is compared to the more standard approach taken by Turkey's leaders.

Input 2: The Energy Crisis: Individual Perceptions of Nuclear Energy

The Shah's approach to nuclear energy began to change in the early 1970s, after the dramatic rise in oil revenues beginning in 1972. In Turkey, the government also prioritized the development of nuclear energy during this same time period; empowering TAEC to undertake site licensing studies at Akkuyu and then to begin negotiations with Sweden's ASEA-Atom and Stal-Laval. It was during this period of time that the Shah centralized nuclear decision-making, after he created by royal decree the Atomic Energy Organization of Iran (AEOI), and placed it under the direction of Dr. Akbar Etemad (a

physicist trained in reactor physics in the Swiss university of Lausanne).[284] By contrast, Turkey's nuclear negotiations remained rather limited and ultimately driven by its dire need to diversify its energy resources.

As explained in the previous chapter, Iran's economic prosperity during this time period helped to solidify relationships with foreign suppliers, whereas Turkey's financing problems hindered its nuclear plans. Iran also benefitted from the centralization of nuclear decision-making and strong support from the Shah (albeit only after 1972). The allocation of incredible resources and the empowerment of the AEOI resulted in the dramatic expansion of nuclear energy.

Iran

Hymans argues that nuclear weapons decisions are non-routine and require a leader take a leap in the dark. With regards to nuclear energy, the consequences are relatively easy to discern: the major risks are cost overruns and, once the reactor goes critical, the potential for a nuclear accident resulting in the release of radioactivity. In most new nuclear states, the decision-makers rely on outside contractors to supplement indigenous nuclear expertise. The Shah was no different, and initially commissioned directed the Ministry of Water and Power[285] to develop a feasibility study for the

[284] To help expedite the nuclear project, in 1974 the Shah created the Atomic Energy Organization of Iran by a special decree. The decree stated that "in view of the importance that we attach to the utilization of nuclear power ... the government is duty bound to set up organizations which will establish coordination and supervision over all matter pertaining to the use of nuclear energy." See: "Shah Issues Decree on Nuclear Power Organization," *Teheran Domestic Service,* Daily Report, Middle East and Africa, FBIS-MEA-74-054, March 19, 1974, p. K1.

[285] In the 1960s, Iran's small nuclear research program was overseen by the Ministry of Science and Higher Education, the Ministry of Water and Power, and in the Plan and Budget Organization. See: U.S. Embassy Tehran to State Department, "The Atomic Energy Organization of Iran," May 11, 1977, Confidential, Freedom of Information Act

development of a nuclear energy program. Yet as of 1972, the relevant ministries lacked the trained personnel to conduct such a study. The Iranian government then turned to the scientists at the nuclear research center at the University of Tehran but the center lacked the capacity to undertake such a study. Tehran's nuclear efforts then stalled for close to two years.[286]

Absent indigenous expertise, the Shah commissioned the Montreal Engineering Company (known at the time as Monenco Inc.) to put together a feasibility study for the development of a nuclear energy program in Iran.[287] Up to 1964, Monenco had focused heavily on electric projects in Canada. Yet beginning that year the company began to expand and diversify into new fields, including nuclear energy. In 1967, Monenco created Canatom Ltd. in a three-way partnership with two other engineering companies. The company later became the largest private sector nuclear engineering firm in Canada. Canatom provided a "complete range of services ... [including] supply and construction management, design engineering, operating plant support and the management and decommissioning of radioactive materials."[288] Later, in 1973, Monenco established an Iranian subsidiary, known as Monenco of Iran to consult on energy issues.[289] Monenco was then tapped to write an assessment of Iran's nuclear plans.

Monenco of Iran's report concluded, in 1974, that nuclear power was economical and affordable. According to nuclear energy expert Judith Perera, the report indicated that

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Release, accessed on December 11, 2013, http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc14b.pdf,

[286] *Ibid.*

[287] Judith Perera, "Nuclear Industry of Iran," Menas Associates, 2006.

[288] "SNC-Lavalin to take total ownership of Canaton NPM Inc.," Press Release, SNC-Lavalin, November 18, 2004, http://www.snclavalin.com/news.php?lang=en&id=100.

[289] Monenco Iran Consulting Engineers, Annual Report 2012, accessed December 11, 2013, http://monenco.com/Default.aspx?tabid=225.

"nuclear [energy] was the most economic source of power for based-load operations and middle-range operations down to 4,800 hours a year or an annual factor of about 58 percent."[290] The report was overly optimistic in its price assessments and was certainly not independent given the interests that Monenco had in securing lucrative nuclear contracts in Iran. To complement this study, Iran also relied on a multi-volume study conducted by the Stanford Research Institute, which concluded Iran would require 20,000 MW of electrical capacity by 1990 to support its growing economy. Thereafter, the Shah declared his intent to produce this power using some twenty 1,000 MW nuclear reactors, procured from foreign nuclear firms.

The Shah's "leap of faith" therefore was based on research conducted by one industry related source, as well as a more comprehensive assessment of Iran's future energy needs. This suggests that the Shah's decisions were based on data culled to justify a decision made based on his own subjective understanding of nuclear energy. The report's conclusions were a foregone conclusion: the development of nuclear energy. As such, it served to reinforce the Shah's recent prioritization of nuclear energy. This suggests that the decision was ultimately based on the availability of the heuristic. This refers to psychological research suggesting that "when faced with the difficult task of judging probability or frequency, people employ a limited number of heuristics [i.e., mental shortcuts taken when making non-routine choices] which reduce these judgments to simpler ones," using the "strength of association as a basis for the judgment of frequency."[291]

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[290] Perera, "Nuclear Industry of Iran."
[291] Amos Tversky and Daniel Kahneman, "Availability: A Heuristic for Judging Frequency and Probability," *Cognitive Psychology,* vol. 4 (1973), pp. 207-232.

The Shah based his assessments on a flawed industry report and the deeply ingrained belief that nuclear energy presented Iran with a unique opportunity to conserve energy resources, whilst also creating a more profitable petro-chemical sector. For example, in a 1974 interview with *Der Spiegel,* the Shah argued that Iran's oil would be exhausted in thirty years, forcing it to extract oil from mature fields. He then explained the necessity of Tehran developing a petrochemical and pharmaceutical industry to sell products to Europe and the West in a post-oil world, saying, "I will sell oil in the form of petrochemical products. I will sell you aspirin. I will not sell you crude oil."[292]

The Shah was also influenced by AEOI chief Etemad, who met on a weekly basis with the monarch to explain nuclear physics after the AEOI's founding in 1974. Etemad, according to former colleague Mehdi Sarram (the former director for safeguards and security at AEOI), thought that "Nuclear [technology] had no limit," which meant that Tehran should engage in all aspects of nuclear research to develop expertise.[293] In 1975 Etemad told *Le Monde* that Tehran "want[s] to possess an installed power capacity of 70,000 megawatts [with nuclear power comprising 20,000 MW of this total figure]," claiming that the high figure was a result of its plans to rapidly industrialize so as to raise "the living standards of the Iranian people." Etemad then described the origins of the nuclear project, telling the reporter that "for a certain number of years his imperial majesty has proposed a new energy program according to which fossil fuels would no longer be used to produce energy but as a raw material in industry."[294]

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[292] "Shah Gives View on Oil in *Der Spiegel*," *Teheran Domestic Service*, in Daily Report, Middle East and Africa, FBIS-MEA-74-00, January 8, 1974, pp. K1-K9.
[293] Author phone interview with Mehdi Sarram, December 17, 2013.
[294] "Le Monde Interviews Iranian Nuclear Energy Official," *Le Monde*, in Daily Report, Middle East and Africa, FBIS-MEA-75-241, December 15, 1975, p. R1.

The centerpiece of Iran's nuclear research efforts were the AEOI's plans to develop a large research center near Isfahan, dubbed the Isfahan Nuclear Research Center (ENTEC). The plan for ENTEC, according to Etemad, was to use the facilities to train power plant engineers for research on power reactors, "particularly breeder reactors," and for experiments to "familiarize [Iran] with the fuel cycles." Tehran was particularly interested in being "able to manufacture the fuel elements of the light water power stations and to learn how to handle uranium and plutonium."[295]

The emphasis on developing a full-fledged nuclear research program, backed by seemingly unlimited funds, resulted in the creation of a large nuclear bureaucracy beholden to directives and funding from the Shah. By 1976, for example, the AEOI had more than 1,000 employees, earning a wage in excess of that of the typical Iranian governmental workers.[296] Nevertheless, Iran continued to struggle with a manpower shortages up until the collapse of the regime. This forced the AEOI to hire foreign experts, as well as to invest considerable amounts of money into the training of the next generation of scientists at western universities.[297]

The Shah's priority, however, was to procure reactors as quickly as possible, rather than focus on building up an indigenous industry. This approach, combined with Iran's limited technical expertise, explains why the AEOI opted to conclude a "super turn-key" arrangement with Germany for the Bushehr reactor, despite internal AEOI concerns that the "super turnkey" project would preclude Iranian industry from gaining

[295] *Ibid*; U.S. Embassy in Tehran to State Department, "GOI/AEOI Plans for Isfahan Nuclear Technology Center, ENTEC," February 14, 1977, Secret, available at: http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc25b.pdf.
[296] U.S. Embassy in Tehran to State Department, "The Atomic Energy Organization of Iran," April 15, 1976, http://www2.gwu.edu/~nsarchiv/nukevault/ebb268/doc14a.pdf.
[297] *Ibid.*

much needed experience during construction. Similarly, Iran's agreement with Framatome for the construction of the Isfahan nuclear research center was also based on a "super turn-key" arrangement. Moreover, in a further indication of how centralized Iranian decision-making was, Etemad had to fly to Shah's chateau in Switzerland to receive the monarch's personal permission to sign the agreement, after the AEOI had reached an agreement with Framatome on the facility.[298]

Findings

The data indicates that the Shah retained day-to-day control over the direction of the Iranian nuclear program during the 1970s. As such, the program resembled his public pronouncements about the necessity of developing a nuclear energy program. Moreover, Etemad's deference to the Shah's decision-making indicates that the bureaucracy remained beholden to the monarch's directives, rather than acting as an internal lobby to pressure the Shah to adopt specific nuclear policies. To be clear, Etemad and other AEOI officials did have a degree of autonomy.

Moreover, in the case of Etemad, he did have close contact with Shah; giving him the opportunity to influence the monarch's understanding of nuclear issue. Etemad's influence on the direction of policy appears limited,as evidenced by his inquiry about developing nuclear weapons. In his book *Nuclear Iran: The Birth of an Atomic State,* David Patrikarakos quotes Etemad, who said that after meeting with the Shah on a weekly basis for close to six months, he asked the monarch whether he wanted nuclear weapons. The Shah, after explaining his military plans for the region, told Etemad that

[298] Patrikarakos, *Nuclear Iran*, pp. 45-46.

Iran had no need for nuclear weapons. He then repeated his frequent public assertion that he could change his mind if other nations in the region proliferated.[299]

According to Mehdi Sarram, Iran's selection of light-water reactors suggested an interest in nuclear power, rather than weapons. Had Iran wanted to develop a plutonium cycle for weapons, he argues, it would have opted for technology that was better suited for the task, i.e. the purchase of heavy water reactors. This means that the main thrust of the AEOI's work was the development of nuclear energy through the purchase of power reactors. Nevertheless, he notes that the AEOI was involved in almost every area of nuclear research to help satisfy the Shah's desire to be conversant in all areas of nuclear research.[300]

The data suggests that the Shah made most – if not all – of the country's important nuclear decisions. The AEOI, in turn, was structured in such a way that guaranteed the Shah's close control over the direction of the organization. Thus, while powerful when compared to other bureaucratic agencies at that time (including the all-important oil ministry), the ultimate decision remained in the hands of the Iranian monarch. The Shah, therefore, would have had to make the decision to proliferate. His policy, while at times muddled, was to abstain from developing nuclear weapons, so long as the smaller Arab states in the region did not acquire nuclear weapons. This skeptical embrace of nonproliferation prevailed up until the monarch's overthrow in 1979; resulting in a new leadership and different actors that made a series of different nuclear decisions.

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[299] *Ibid,* pp. 62-68.
[300] Author phone interview with Mehdi Sarram, December 17, 2013.

More broadly, these dynamics suggest that leaders rely on subjective pieces of data, when ostensibly working to make a rational decision. The Shah's framing of nuclear energy related issues stemmed from an industry report he commissioned. This report, in turn, provided the basis for his public talking points. The data was a reflection of his own personal ambitions, rather than a stereotypical rational decision-making process. Based on this, one can assume that a leader's personal conception of nuclear energy is the key data-point for understanding the direction of a state's nuclear policy in centralized states, where the sovereign exerts considerable influence on the bureaucracy.

Turkey

Turkey's nuclear program during the 1970s lacked a strong leader with similar authority to the Shah. The data suggests that Turkey's nuclear negotiations with Sweden were beset with problems, owing to financing difficulties and Ankara's hitherto resistance to the NPT. A better comparison stems from Turkish nuclear decision-making after the 1980 military coup. After the coup, two different Turkish leaders, General Kenan Evran and Turgut Ozal, made a series of nuclear decisions. The differences suggest that, like in the case of the Shah, non-nuclear related subjective variables influenced decision-making.

Evran, for example, pursued a traditional "turn-key" model, after Turkey launched a new nuclear tender. In April 1982 the Turkish Electrical Authority (TEK) announced its intent to reissue an international tender for the construction of a 900 MW reactor at the Akkuyu site. In a departure from the negotiations with Asea-Atom, where Ankara insisted on full Swedish funding of the project, TEK announced that the government would "meet about 60 percent of costs for all of its projects, including the

nuclear plant at Akkuyu, with its own resources." Ayhan Erkan, TEK's deputy general manager, indicated that Ankara had approached KWU about the sale of two 400 MW reactors for the Akkuyu site but the talks had gone nowhere; and, unlike the negotiations with Asea-Atom, it also received some interest from KWU and Westinghouse for the construction of a larger nuclear power plant.[301]

Just days before the November election, TEK sent letters of intent to General Electric, Kraftwerk Union, and Atomic Energy of Canada Ltd. KWU was thought to have had the upper hand owing to its low bid (about $1,100 per installed kilowatt for a 970-MW pressurized water reactor) that included a generous financing package backed by the central government and Siemens - KWU's parent company.[302] General Evren indicated that his government had decided to send out three letters of intent because "of the favorable financing being offered by the suppliers."[303]

After Ozal's election, Ankara voided these letters of intent, owing to internal disagreements about financing. After some back-and-forth with AECL, KWU, and General Electric[304], Ozal changed the financing requirement for the Akkuyu project in

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[301] Metin Demirsar, "The Turkish Electricity Authority (TEK) Plans to Reissue Tenders," *Nucleonics Week*, vol. 23, no. 15, April 15, 1982.

[302] James Branscome,"Turkish Reactor Order Muddled as Three Vendors get Letters of Intent," *ibid,* vol. 24, no. 44, November 3, 1983.

[303] Edward Clifford, "Sale of Candu to Turkey anticipated," *Globe and Mail,* November 4, 1983.

[304] After the election, the Ozal government indicated that AECL and KWU would compete for the Akkuyu site while GE would work with Turkish authorities on a separate project at second site on the Black Sea coast known as Sinop. In March 1984, both AECL and KWU were optimistic and indicated that they felt as if TEK would award a contract by the end of April. To help meet Turkey's financing needs, KWU partnered with German insurance company Hermes to guarantee "1.4-billion deutsche marks (roughly $540-million) and Turkish sources [were] expected to provide 700-million DM ($270-million)," which left "900-million DM ($345-million) of the estimated 3-billion DM project to be financed from other sources." AECL opted to enable South Korea to

1984. Up until that point, Ankara had been asking that the vendor provide 85 percent of the funding, but changed this requirement to 100 percent, after the government passed market oriented reforms; including the Build-Operate-Own/Transfer law. These changes, according to Izak Atiyas, were controversial, and thus resulted in Ozal trying to side-step political resistance by centralizing power within the Prime Ministry. According to Atiyas, "there was a significant degree of centralization of policy making authority, and an increased appeal to discretionary instruments. Hence, while on the one hand the scope of state intervention was reduced through liberalization, decision making within the government became more centralized."[305] Thus, from the outset of the post-1980 decision-making process, Turkey's leadership moved to further centralize power; resulting in greater control over nuclear issues in the hands of the Prime Minister.

With regards to the procurement of nuclear reactors, the process was beset by problems stemming from the passage of decrees outside of the parliament to advance Ozal's preference for privatization. Thus, in a key difference from the Shah's nuclear decision-making, Ozal viewed the pursuit of nuclear energy through the prism of Turkish economic privatization; tying the 1980s era negotiations to an overarching plan to privatize Turkey's state owned electricity utilities. As Atiyas notes, "With regards to the

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participate in the project in order to help decrease its funding. In doing so, AECL agreed to transfer proprietary information to South Korean nuclear firms. See: "Three Vendors are Expected to Submit Final Offers to Turkey," *ibid,* vol. 25, no. 11, March 15, 1984; Edward Clifford, "Firms, AECL fall out over reactor deal," *Globe and Mail,* January 7, 1984; Ann Taboroff, "The Turkish Electrical Authority has Raised the Financing Requirement," *Nucleonics Week,* vol. 25, no. 18, May 3, 1984.

[305] Izak Ayitas, "Economic Institutions and Institutional Change in Turkey during the Neoliberal Era," *New Perspectives on Turkey,* vol. 47, (September, 2012), p. 61.

energy sector, governments tried to attract private capital through various contractual schemes entailing monopoly rights and government take or pay guarantees."[306]

These changes resulted in Ozal having the power to make nuclear specific decisions. Thus, after both KWU and AECL altered their bids to account for the 100 percent vendor financing requirement, Turkey's Minister of Energy and Natural Resources, Cemal Buyukbas, noted that the final decision over which reactor to choose was now in the hand's of the Prime Minister.[307] Ozal had close ties with ENKA, the Turkish private company working in partnership with AECL: his minister of customs and monopolies, Vural Arikan, was a former board member of ENKA and his former son-in-law worked for the firm as did the son of his foreign minister, the brother of his press aide, and the brother of one of his closest advisors.[308] At the time, ENKA was reportedly experiencing financial difficulties and needed the Akkuyu project to help become more competitive in Turkey's private electricity market.[309]

In these circumstances, Ozal had many competing interests when considering the country's nuclear future. For one, he was quite corrupt[310], which adds an element to nuclear decision-making that is rarely accounted for in nonproliferation scholarship. Thus, from the outset of the tender, AECL had the upper hand for two distinct reasons: they had the lowest bid; and ENKA had close ties to a corrupt Ozal. However, throughout the process the only constant in Turkey's early decision-making was the insistence on

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[306] *Ibid,* p. 63.
[307] Ann Taboroff, Silke McQueen, Ann MacLachlan, "Turkey Postpones Nuclear Decision to August," *Nucleonics Week,* vol. 25, no. 28, July 12, 1984.
[308] Ann Taboroff and Ray Silver, "AECL and KWU cut prices in heated competition for Turkish nuclear order," *Ibid,* vol. 25, no. 36, September 6,1984.
[309] *Ibid.*
[310] Erik J. Zurcher, *Turkey: A Modern History* p. 286.

private vendor financing. Thus, for example, in a private meeting with the West German leadership in September, Ozal proposed new tender terms, asking that the vendor operate the plant for fifteen years before transferring it to the Turkish private firm that partnered with it.[311] The change in terms forced the vendors to once again alter the terms of their bid to account for the construction costs and another $1 billion in interest payments on the loans needed to cover the gaps in funding.

Ultimately, Ozal opted to begin exclusive negotiation with AECL (ENKA's foreign partner), after agreeing to take a 60 percent ownership stake in a local project company that would oversee the construction of the power plant (KWU, by contrast only offered to take a 51 percent stake in the company).[312] AECL conducted the negotiations without having first received guaranteed financing from the Royal Canadian Bank. To diminish risk, it reached an agreement with British turbine maker N.E.I. Parsons PLC, which also received the exclusive right to build a conventional power plant at a neighboring site. Nevertheless, the financing remained "cloudy," according to a representative from White & Case, the law firm representing the Turkish government in the negotiations.[313]

The two sides signed a preliminary agreement on August 22, 1985, which committed the AECL consortium to a 60 percent ownership stake in the project. AECL,

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[311] Ann Taboroff and Ann MacLachlan, "Turkey wants a Nuclear Plant Constructor to Operate the Plant," *Nucleonics Week,* vol. 25, no. 40, October 4, 1984.
[312] Ann Taboroff and Ray Silver, "Kraftwerk Union has Offered to Provide DM 710-Million," *ibid*, vol. 25, no. 46, November 15, 1984; Ann Taboroff and Ann MacLachlan, "AECL Ready to Consider Turkish Government's Terms for Akkuyu Project," *ibid,* vol. 25, no. 47, November 22, 1984; Ann Taboroff, "The Turkish Government Extends Akkuyu Negotiations with Both Competitors," *ibid*, vol. 26, no. 8, February 21, 1985.
[313] Ann Taboroff, "Atomic Energy of Canada Ltd. (AECL) has reached an agreement with Turkey," *ibid,* vol. 26, no. 28, July 11, 1985.

however, remained cautious, with one executive saying that "there is still a lot to do before we finally have all the agreements in place ... The lenders have never been faced with a deal like this before."[314] The financial deliberations inside the Canadian government persisted into 1986[315] and eventually collapsed after lenders refused to finance the project, owing to concerns about the BOT financing arrangement.

Ozal's preference centralization continued after his death in 1993. Tansu Ciller, for example, continued to implement "Ozal like" reforms, in much the same manner of her Prime Ministerial predecessor. However, up until the mid-1990s, the BOT model had failed to attract investments in Turkey. It was only after the Ministry of Energy and Natural Resources passed updated BO regulations – outside of Parliament – that more foreign companies began to invest more heavily in Turkey's energy sector. The new regulation included a dispute resolution under the UN Commission on International Trade Law (UNCITRAL), as well as a 100 percent Treasury guarantee during the

[314] Ann Taboroff and James Branscome, "AECL Reaches another Major Milestone in Proposed Plant Deal with Turkey," *ibid,* vol. 26, no. 34, August 22, 1985.

[315] In December 1985, the Canadian, British, and Turkish governments were working with investment dealers McLeod Young Weir to coordinate financing with Morgan Grenfell in London, Morgan Stanley in New York, and Nikkon Securities in Tokyo to come up with the funds for the project. However, in order for the financing institutions to provide the capital, they indicated that "the Canadian, British, and Turkish governments would have to guarantee the 60 percent, 20 percent, and 20 percent shares, respectively, of the industries involved in their countries." Such a requirement would have required Canada's Export Development Corp (EDC) to commit $750 million out of a budget of $1.2 billion to guarantee AECL's share. See: Ray Silver, "Akkuyu Financing Guarantees Being Sought from Three Nations," *ibid,* vol. 26, no. 24, June 13, 1985; Carol Reed, Thomas Goltz, Ray Silver, and Mark Hibbs, "Turks say AECL Deal off for Akkuyu Bay, Talks Open with KWU," *ibid,* vol. 27, no. 50, December 11, 1986.

contract period for the then state-owned Turkish Electricity Generation and Transmission Company (TEAS).[316]

Turkey's Constitutional Court, however, voided these regulations, which forced the Turkish parliament to debate the issue; resulting in the passage of updated legislation in July 1997. This new law excludes nuclear power plants, which means that the Turkish government has yet to provide a Treasury guarantee for the cost of reactor construction. This resulted in foreign vendors continuing to forego cooperation with the Turkish state, due to continued concerns about the viability of the BOO model for nuclear power plants.

Every Turkish politician after Ozal pursued this model, including the Islamist Necemettin Erbakan and the Kemalist oriented Mesut Yilmaz. Based on this history, the data indicates that the worldview – or even economic model – espoused by different Turkish leaders did little to affect their approach to nuclear energy issues. Instead, the decision was based on the Ozal precedent of using the energy sector to attract FDI. The current government, the AKP, has maintained this approach, despite the senior leadership equating the development of nuclear power with symbols of political power, particularly for Muslim majority countries.

For example, the current Prime Minister, Ahmet Davutoglu, has written extensively about nuclear issues during his time in academia Davutoglu's academic work has since become the basis for Turkish foreign policy, which the AKP refers to "Strategic Depth." Davutoglu's approach to foreign policy derives from his belief in the potency of

[316] S. Gurcan Gulen, "Electricity in Turkey: A Legal Battleground in an Ongoing Privatization War," *Power Economics,* December 31, 1998; Ali Ulusoy and Fuat Oguz, "The privatization of electricity distribution in Turkey: A legal and economic analysis," vol. 35, no. 10 (October, 2010), p. 5025.

Islam as a source of communal strength and political legitimacy[317], as well as his adoption of turn-of-the-century theories of geopolitics. Key among the latter include Halford John Mackinder's "Heartland Theory", Nicholas J Spykman's "Rimland Theory", and the works of Karl Haushofer, whose theories on geopolitics are in turn derived from that of Freidrich Ratzel, who put forward the concept of lebensraum.[318] This term has negative historical connotations, of course, but Haushofer's understanding of geopolitics is premised on the argument that borders are not static, but are instead "dynamic" and "ever changing"[319]

These scholars divided the world into zones, known as the "heartland",[320] comprising much of Central Asia, and the "rimland",[321] which extended from Western Europe through the Arabian Peninsula to Asia. During the Cold War, these areas were under the influence of either the U.S. or the Soviet Union, thereby preventing the

[317] Aspects of Turkish foreign policy are based heavily on Davutoglu's understanding of Ottoman history and his belief that the empire's political strength stemmed from the embrace of Tawhid (oneness with, or acceptance of, Allah) and Tanzih (a belief in the purity of Allah) as "the paradigmatic base of unity among conflicting schools, sects, and traditions in Islamic history." In other words, the source of the Ottoman Empire's strength lay in the legitimacy of its ruler, itself rooted in the embrace of Islam. This provided the framework for societal harmony in the multi-ethnic and multi-religious empire. Applied to the predominantly Muslim Middle East of the twenty-first century, the concepts of Tawhid and Tanzih would therefore allow sectarian differences to be overcome, due to the fact that both are ultimately embraced by all of Islam's different sects. See: Ahmet Davutoglu, "The Impacts of Alternative Weltanschauungs on Political Theories: A Comparison of the Tawhid and Ontological Proximity," PhD thesis, 1990, pp. 65–67.

[318] Behlul Ozkhan, "Turkey, Davutoglu and the Idea of Pan-Islam," S*urvival: Global Politics and Strategy*, vol. 56, no. 4, (August/September 2014), pp. 119–40.

[319] Holger H Herwig, "Geopolitik: Haushofer, Hitler and Lebensraum," *Journal of Strategic Studies* (vol. 22, no. 2–3, 1999), pp. 218–41.

[320] Halford John Mackinder, "The Geographical Pivot of History," *Geographical Journal*, vol. 23, no. 4, (April, 1904), pp. 421–37.

[321] Nicholas J Spykman, "Geography and Foreign Policy," *American Political Science Review*, vol. 32, no. 1, February 1938, pp. 38–50.

expansion of Turkish influence there. The bipolar order, in turn, was upheld by the "balance of terror" and the reliance upon nuclear weapons to keep border's static. The collapse of the Soviet Union was thus perceived by Davutoglu as an important opportunity for Turkey to extend its sphere of influence into these vitally important areas (many of which had been under the control of the Soviet Union). In Central Asia, the newly independent states were predominantly Muslim, had access to vital resources, and had historical and cultural links to Turkey. In the rimland, Davutoglu pointed out, eight of the world's sixteen most important waterways were under the control of Muslim-majority states. In Davutoglu's view, therefore, Turkey's connection to these states via their shared religion provided Ankara with the opportunity to expand its power and create strategic depth.

Davutoglu then drew upon the work of Haushofer to explain why Turkey has natural lebensraum in both of these regions, which he described as the country's "natural hinterland".[322] In this regard, he argued that Turkey was situated at the center of the Middle East, the Caucasus and the Balkans, thus providing it with a natural hinterland. In turn, Davutoglu postulated, Turkey's historical links to these areas meant that Ankara possessed a unique understanding of the numerous different cultures in its near abroad. This understanding, he argued, would allow Turkey to expand into these areas to carve out a zone of influence throughout much of the area once controlled by the Ottoman Empire. Davutoglu later incorporated this worldview into his foreign policy of "strategic depth", which would come to be known as "zero problems with neighbors". The policy

[322] Ozkhan, "Turkey, Davutoglu and the Idea of Pan-Islam," p. 123.

envisioned a region of borders blurred by increased trade and a common culture and history.

The introduction of nuclear weapons, Davutoglu argued, solidified the Soviet position in the heartland, whereas the Western bloc remained riparian powers, focused on the rimland states. Based on this understanding of geopolitics, Davutoglu attributed the Cuban Missile Crisis to Alfred Thayer Mahan's assertion that the British Empire's control of the sea – and the United States' subsequent taking over of that role after World War II – guaranteed Anglo-American hegemony along the rimland. The Soviet Union, by contrast, was a land-power in the heartland. Moscow's meddling in riparian Cuba, therefore, required a robust U.S. response and signaled a Russian attempt to gain greater control over a key piece of territory in the Caribbean Sea.

Davutoglu's point of view differs considerably from the most common explanation for Soviet actions during this period of the Cold War; specifically that the state of its missile forces were such that it could not guarantee a retaliatory strike against the United States, which required the forward deployment of shorter-range missiles systems to hold American targets at risk.[323]Similar to this, after the collapse of the Soviet Union, Davutoglu wrote that Muslim World's strategic position had been strengthened, owing to the fact that Muslim majority countries controlled both the heartland and the rimland. Kazakhstan, he continued, was an example of this because it "had nuclear capacity and power."[324] At the time of Davutoglu's writing, Kazakhstan had formally renounced nuclear weapons, but still had legacy Soviet nuclear weapons based on its

[323] James G. Blight, Joseph S. Nye Jr. and David A. Welch, "The Cuban Missile Crisis Revisited, *Foreign Affairs,* (Fall, 1987), pp. 170-188.
[324] Ahmet Davutoglu, "The Clash of Interests: An Explanation of the World [Dis]Order," *Intellectual Discourse*, vol. 2, no. 2, (1994), p. 121.

territory. The final Soviet weapon was removed in 1995, leaving Kazakhstan with five nuclear reactors (one power producing, with four research reactors.)[325]

Furthermore, in his book, *Strategic Depth,* Davutoglu chastised the international community for its use of the term *Islamic Bomb* to describe Pakistan's nuclear weapons program, arguing that is akin to efforts to equate Islam with terror; further citing that western academics or policymakers don't use the term "Hindu Bomb" to describe India's nuclear weapons, or "Catholic terror" when discussing the Irish Republican Army's bombings in London.[326] This approach is reflective of Davutoglu's central thesis about the post-Cold War order.

Indeed, he contends that Western political theory is ill-suited to the Muslim world because it arrogantly assumes that individual knowledge can compete with that of Allah. He also blames the region's instability on the import of Western political constructs like ethnic nationalism,[327] arguing that the rulers who have embraced these concepts have lost their political legitimacy, having to rely instead on repression to remain in power. This repression, he asserts, is supported by the West, which fears that any change to the political status quo would undermine its own influence in the Middle East.

Taken together, these comments on nuclear issues suggest that Davutoglu believes that the development of nuclear energy is an asset for Muslim majority states – and indeed symbol of prestige, similar to Abraham's central argument about fetishization. Similarly, deterrence kept in place a global order based on an unsustainable

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[325] Kazakhstan Country Profile, Nuclear Threat Initiative, last updated June 2014, http://www.nti.org/country-profiles/kazakhstan/nuclear/.
[326] Ahmet Davutoglu, *Stratejik Derinlik* (Istanbul: Kure Yayinlari, 2001), pp. 252-253.
[327] Ahmet Davutoglu, "Yeni dunya duzeninde Misak-i Milli," *Aksiyon*, March 30, 1996, http://www.aksiyon.com.tr/aksiyon/columnistDetail_getNewsById.action?newsId=1431.

status quo based on the subjugation of ethnic and religious identity. This worldview, however, has not resulted in any major changes to Turkey's post-Cold War embrace of nonproliferation. The AKP has remained committed to the BOO model, despite it complicating the procurement of nuclear reactions. Had the AKP sought to procure a reactor for reasons related to "prestige" in the Muslim world, it could have pursued a traditional turn-key vendor model.

Furthermore, there is no evidence to suggest that this understanding of nuclear technology/nuclear weapons changed Turkey's reactor procurement policy. In fact, the AKP continued to emphasize the BOO model, despite the model's financing provisions having prevented Ankara from procuring a reactor in the past. In 2008, for example, the AKP dominated Parliament passed a complicated nuclear law designed to entice foreign vendors without having to do away with the BOO format. Law No. 5710 empowered state-owned Turkish Electrical Authority (TETAS) to oversee the bidding process and to select the most competitive offer. The vendor would then be required to negotiate a bilateral arrangement to sell a certain amount of energy produced at the site for up to fifteen years directly to TETAS, which would then distribute it to the country.[328] The law had been intended to further entice foreign companies to enter Turkey's nuclear sector, but the failure to include a provision for a Treasury guarantee for the still in place BOO model limited Turkey's options.

This resulted in only one company, Rosatom, submitting a bid for the 2008 AKP backed nuclear tender. During the tender process, Turkey quietly let suppliers know that

[328] Unofficial Translation of the Turkish Law No. 57102 Concerning the Construction and Operation of Nuclear Power Plants, Republic of Turkey, November 9, 2007, http://www.oecd-nea.org/law/legislation/turkey/Turkey2007-npplaw.pdf.

it wanted vendors to take back spent fuel, which further indicates that it had no plans for reprocessing or long term spent fuel storage, underscoring Ankara's emphasis on power generation, and not a nuclear weapons program.[329] The single bidder resulted in Turkey cancelling the tender all-together, in favor of direct bilateral negotiations. The key difference between the Turkish and Russian position stemmed from the guaranteed price per-kilowatt hour. The Russian side initially proposed 21.16 U.S. cents per kilowatt-hour, whereas Ankara countered with a demand for Turkey favored a price around 12 U.S. cents.[330]

Like during Ozal's negotiations with AECL, graft may have also played a role. According to Western diplomats, "the outcome of separate ongoing negotiations between the two countries over future natural gas pipeline projects," suggesting some element of corruption in the final decision-making process.[331] Furthermore, the company's that have since been selected to build the non-nuclear infrastructure at the Akkuyu site are known to be close to the AKP government; particularly, President Erdogan.[332] Nevertheless, the two sides reached an agreement in May 2010, for Rosatom to build, operate, and own

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[329] David O'Byrne, "Four companies buy bid documents for Turkey's first nuclear plant," *Platts Nucleonics Week,* April 10, 2008.
[330] Mark Hibbs, "Council of Ministers to decide future of Turkey's reactor bid," *Platts Nucleonics Week,* November 6, 2008; *Idem*, "Turkey to build VVERs at Akkuyu if Tetas, Cabinet approve ASE bid," *ibid,* January 15, 2009; Russian-Turkish consortium bids for Turkey's first nuclear plant," BBC Monitoring Service, Europe - Political, January 19 2009; "Russian-Turkish consortium revises bid for Turkish nuclear plant," *ibid*, February 13, 2009.
[331] Mark Hibbs, "Russia, Turkey still negotiating on terms of nuclear, gas accords," *Platts Nucleonics Week,* August 13, 2009.
[332] "Taner Yıldız: Akkuyu Liman ihalesi 10 Mart'ta sonuçlanacak," *Deniz Haber Ajansi,* March 2, 2015, http://www.denizhaber.com.tr/taner-yildiz-akkuyu-liman-ihalesi-10-martta-sonuclanacak-haber-60627.htm; Mehul Srivastava and Benjamin Harvey, "Erdogan Eye on 'Crazy Projects' Links Turkey Scandal to Builders," *Bloomberg Business,* January 5, 2014, http://www.bloomberg.com/news/articles/2014-01-05/erdogan-eye-on-crazy-projects-links-turkey-scandal-to-builders.

four VVER-1200 nuclear reactors at the Akkuyu site. The Russian firm agreed to establish a local special purpose vehicle (SPV) to finance and manage the construction and operation while TETAS agreed to purchase 70 percent of the electricity from the first two units for a guaranteed price of 12.35 U.S. cents per-kWh. TETAS also agreed to purchase 30 percent of the electricity from the third and fourth unit.[333]

Rosatom's desire to enter the Turkish market is twofold: First, after the collapse of the Soviet Union, the Kremlin has provided numerous subsides to the Russian nuclear industry. Rosatom is not run as a for-profit company; instead receives funding directly from the Kremlin and its associated sovereign wealth fund.[334] Second, Russia has few high-technology exports. Moscow is therefore eager to keep its foothold in the global nuclear market. In turn, Rosatom has embraced the BOO model, signing contracts with Egypt, Jordan, Vietnam, and Bangladesh on the basis of the Turkish agreement.[335]

Indeed, Turkey's subsequent agreement with Japan, which also had a political reason to conclude the BOO deal with Ankara, differs slightly from that of Rosatom arrangement. In a key departure – and in line with Ozal's approach with AECL in 1986 – then Prime Minister Erdogan indicated that state utility EUAS was prepared to take up to a 25 percent stake in the project company.[336] To this end, Turkey signed an agreement with a consortium of Mitsubishi, Itochu, and GDF Suez in March 2013 for the

[333] "Energy Ties Bind Together Turkey's and Russia's Nuclear Power Sectors," *Business Monitor Online,* May 13, 2010.
[334] Leonid Andreev, "The Economics of the Russian Nuclear Power Industry," Bellona Foundation, 2011, http://bellona.org/filearchive/fil_Economics-of-the-Russian-Nuclear-Power-Industry-English.pdf.
[335] "Rosatom offers emerging nations nuclear package," *Reuters*, May 13, 2013, http://www.reuters.com/article/2013/05/13/us-rosatom-nuclear-russia-idUSBRE94C09I20130513.
[336] "State to take 25 percent stake in NPPs," *Electricity News*, Energy in East Europe, April 9, 2010.

construction and operation of an Atmea-1.[337] The deal has yet to be finalized, but Taner Yildiz, Turkey's energy minister, has said: "[EUAS] may own a maximum 30 percent of the shares in the nuclear power plant company to be set up with Japan. We want them not to have a share more than 30 percent. We have two models. The plan A is 49 percent of the shares. In the plan B, it falls to 25 percent and we share the remaining with private sector. The 51 percent share of Japan won't increase. They are also forming their own partnership structure with France."[338]

Findings

The AKP's approach to the issue differed little – if at all – from their predecessors. This continuity in Turkish nuclear decision-making suggests that the leadership's world-view did not drive decision-making. If it did, one would expect the Islamist Erbakan to have adopted a different approach to that of Mesut Yilmaz, a more Kemalist oriented politician. Even in the case of Davutoglu, where there are some reasons to suspect that he has equated nuclear energy with Muslim empowerment, the government pursued the same policy as Turgut Ozal – the architect of Ankara's BO policy. Taken together, the key driver of individual nuclear decision-making in Turkey remains the Ozal era emphasis on BO models of infrastructure development. This

[337] "Itochu, Mitsubishi, GDF in Turkish nuclear plant bid," *Reuters*, March 5, 2013, http://www.reuters.com/article/2013/03/05/turkey-nuclear-idUSL6N0BX2PE20130305; "Mitsubishi Heavy, Areva have won Turkish nuclear plant deal - Nikkei," *Reuters*, April 3, 2013, http://www.reuters.com/article/2013/04/03/turkey-nuclear-mitsubishi-idUSL3N0CQ5ER20130403.

[338] "Turkey to own maximum 30 per cent of nuclear power plant to be built by Japan," BBC Monitoring Service, Europe - Political, May 6, 2013.

suggests that different individuals, regardless of worldview, remain committed to using nuclear energy as a vehicle for private investment in the Turkish economy.

The Anomaly: The Iranian Decision to Proliferate

Compare this with the decisions made in the Islamic Republic. As explained in previous chapters, the evidence suggest the Iranian leadership made the decision to proliferation in 1984/1985; thereafter pursuing all of the infrastructure needed to support the development a nuclear warhead for delivery by ballistic missiles. The program was kept secret from the Iranian public up until 2002, when the NCRI revealed much of the program's critical infrastructure.

After the revelations about Tehran's clandestine nuclear program in 2002, the enrichment program became a tool for the Iranian leadership to demonstrate their commitment to the tenet of the Islamic Revolution. Thus, western efforts to halt Iran's enrichment program are framed within a commonly held conspiracy theory: The West is eager to keep the Muslim world weak to retain control over its dictators and energy reserves. The Islamic Republic argues that the 1979 Revolution upended this western strategy, resulting in continued efforts to overthrow the Iranian leadership.

Did Iran's leadership take a leap in the dark when it made the decision to proliferate? Which individuals shaped Iranian nuclear weapons policy? And is there a difference between the so-called moderates, perhaps best symbolized by Ayatollah Khatami and current Iranian President, Hassan Rouhani and conservatives? Ayatollah Khomeini was an archetypal oppositional nationalist and therefore should have wanted the bomb, per Hymans' research. However, his first instinct after assuming office was to cancel the program, despite ample evidence that Germany would have continued with

construction of the Bushehr reactor. He also appointed Fereydun Sahabi, a non-nuclear expert, to run the AEOI because of his father's loyalty to the revolution.

Sahabi, a geologist by training, advocated for Iran's mining of uranium, on the grounds that Iran would be able to mine and then export unrefined uranium independent of foreign expertise. In 1979, for example, Sahabi said, "the activities of [the AEOI] were directed improperly in the past" yet indicated that Tehran would continue to prospect for uranium.[339] Three days later, however, Sahabi described the Shah's nuclear program as "a program imposed on the Iranian people."[340] This pronouncement echoed that of the new Iranian President Abdulhassan Bani-Sadr, who said, "that the nuclear program had ensued on the "basis of colonialist imposed treaties" that had increased Tehran's dependence on the Western powers."[341] He did, however, leave open the possibility of mining for uranium, saying that "Uranium is one of the resources we have to evaluate ... If we don't use it ourselves, we can always market it abroad."[342]

These early decisions were consistent with Ayatollah Khomeini's post-Revolutionary emphasis on four-core values. These values, according to Karim Sadjadpour, include: justice, independence, self-sufficiency, and Islamic piety. With regards to the links between these tenets and the nuclear program, Sadjadpour notes:

> A recurring theme in Khamenei's speeches is the causal relationship linking scientific advancement, self-sufficiency, and political independence. His ideal vision is of an Iran that is scientifically and technologically advanced enough to

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[339] Paul Lewis, "Khomeini Demands Review of Iran's Foreign Deals: Ayatollah Will Visit Cemetery," *New York Times*, January 22, 1979, p. A11.
[340] "Atomic Energy Organization Projects to be Discontinued," *Tehran Domestic Service*, Daily Report, Middle East and Africa, FBIS-MEA-79-070, April 10, 1979, p. R4.
[341] "Construction Work on Ahvaz Nuclear Power Plant to Stop," *ibid*, Daily Report, Middle East and Africa, FBIS-MEA-79-139, July 18, 1979, p. R6.
[342] David Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, pg. 98.

> be self-sufficient, self-sufficient enough to be economically independent, and economically independent enough to be politically independent.[343]

At its core, Khamenei's argument is not all that different from Turkish Islamist arguments in favor of technological development. Conservative Turkish leaders, for example, also allude to a western plot to keep the Muslim world weak, so as to keep the region under colonial control.[344]

The argument differs in how this widespread belief has been internalized by key decision-makers, and how these perceptions shape policy debates/policy making. As such, this common trope within the Muslim world about the nature of western policy is not the cause of the Iranian decision to proliferate. Nevertheless, much of Iran's leadership now associates the enrichment program with the Revolution's core values and ultimately view western efforts to limit the program as a ruse to keep Iran weak, in order to deprive the country of political independence. The Iranian leadership has latched on to this argument, even though the country's research into enrichment had been a closely guarded secret before 2002.

The tenets of the Revolution are reflected in the world view of Iran's two key nuclear actors: The IRGC and a conservative cadre of key people, including Khamenei, who have been involved in many of Iran's nuclear decisions since 1985. The IRGC was originally created to counter-balance the regular Iranian military, whose links to the Shah – and therefore loyalty to the Islamic Revolution – was a cause for concern for the Revolutionary government. Over time, the group has allied itself with Khamenei and is

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[343] Sadjadpour, "Reading Khamenei: The World View of Iran's Most Powerful Leader, Carnegie Endowment for International Peace, 2009, p. 11, http://carnegieendowment.org/files/sadjadpour_iran_final2.pdf.

[344] Fulya Atacan, "Explaining Religious Politics at the Crossroad: AKP-SP," *Turkish Studies,* vol. 6, no. 2 (June 2005), pp. 188-189.

now regarded as the aging leader's most important bureaucratic supporter. A 2009 RAND study on the IRGC notes, "When reformists during the Khatami era appeared to be a threat to Khamenei, the IRGC and, particularly, its Basij [popular defense forces] force proved to be natural and indispensable allies."[345]

This symbiotic relationship has resulted in these two factions having a mutual interest in pursuing self-sufficiency as means to further empower their factions vis-à-vis other Iranian political groups through the control of illicit trade and Iranian religious/financial institutions, known as Bonyads.[346] The IRGC controls construction companies, as well as the black-market trade and therefore profits from the illegal import and resale of a slew of controlled items, ranging from alcohol to foreign currency.[347] Khamenei, in turn, presides over a patronage network worth hundreds of billions of dollars; from which he is able to maintain personal control (and therefore ensure loyalty) over much of Iran's key political and business interests.[348]

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[345] Frederic Wehrey, Jerrold D. Green, Brian Nichiporuk, Alireza Nader, Lydia Hansell, Rasool Nafisi, S. R. Bohandy, *The Rise of the Pasdaran: Assessing the Domestic Roles of Iran's Islamic Revolutionary Guards Corps* (Santa Monica: RAND Corporation, 2009), p. 80.

[346] The Supreme Leader appoints the directors of Iran's *bonyads* [foundations], which function as independent economic entities and patronage networks unaccountable to the state. See: avid E. Thaler, Alireza Nader, Shahram Chubin, Jerrold D. Green, Charlotte Lynch, Frederic Wehrey, *Mullahs, Guards, and Bonyads: An Exploration of Iranian Leadership Dynamics Corps* (Santa Monica: RAND Corporation, 2009), p. 25.

[347] *The Rise of the Pasdaran: Assessing the Domestic Roles of Iran's Islamic Revolutionary Guards Corps*, p. 55.

[348] According to a 2013 Reuters report, "Khamenei has at his disposal financial resources whose value rivals the holdings of the shah, the Western-backed monarch who was overthrown in 1979. How Setad came into those assets also mirrors how the deposed monarchy obtained much of its fortune - by confiscating real estate. A six-month Reuters investigation has found that Setad built its empire on the systematic seizure of thousands of properties belonging to ordinary Iranians: members of religious minorities like Vahdat-e-Hagh, who is Baha'i, as well as Shi'ite Muslims, business people and Iranians living abroad." See: Steve Stecklow, Babak Dehghanpisheh and Yeganeh Torbati,

Thus, like in the case of previous Turkish and Iranian nuclear decisions, the role of graft and personal empowerment cannot be discounted as a key component of policy-making. In this case, the interests of Khamenei and the IRGC overlap with their natural constituency, the Ruhaniyoun (the faction favoring the strict interpretation of the Khomeini's ideology). This, in turn, has created an easy to discern narrative that policymakers have adopted to justify Iran's nuclear secrecy. For these reasons, the more conservative elements in Iran have grafted the development of enrichment on to the core values of the Revolution. Karim Sadjadpour notes, "For Khamenei, the nuclear program has come to embody the core themes of the revolution: the struggle for independence, the injustice of foreign powers, the necessity of self-sufficiency, and Islam's high esteem for the sciences."[349] Based on this, one would also presume that the people he selected to assist with the development of the program, including the IRGC factions tasked with the weapons related work, share a similar world-view.

As such, there is a certain amount of fetishization of nuclear technology within Iran. This fetishization, however, only took place after the revelation of the program, which suggests that this populist narrative was used to justify the expense (both monetary and political) of the program, rather than being the cause of Iran's pre-2002 nuclear decision-making. If fetishization of technology had been the cause, one would have expected Khomeini to continue the program upon assuming power, ostensibly for reasons of prestige stemming from the development of nuclear technology independent of the West. His decision to cancel the program and then look again to nuclear energy during a

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"Khamenei controls massive financial empire built on property seizures," *Reuters,* November 11, 2013, http://www.reuters.com/investigates/iran/#article/part1.

[349] Karim Sadjadpour, "Reading Khamenei: The World View of Iran's Most Powerful Leader," p. 22.

time of conflict suggests a different set of variables were the reasons for Iran's 1984 decision.

As Hymans notes, when individuals make non-routine decisions, they often rely on subjective variables, as part of a process known as the availability of the heuristic.[350] During non-routine decisions, for example, individuals rely on deeply held beliefs and other subjective variables to simplify complicated decisions. In the case of Iran, this decision was further complicated by the on-going conflict with Iraq, an inherently challenging environment for decision-making, owing to the complexities of war, and then the need to respond to Iraqi WMD attacks.

Naresh Khatri and H. Alvin Ng note that an "unstable environment poses three challenges" for decision-makers. They are: 1) Time constraints on collecting data; 2) need to collect a large amount of data to deal with environmental instability; and 3) lack of reliability about data or information.[351] In the absence of time and data, leaders rely on "an intuitive synthesis" of data they acquired and their own subjective thoughts on the topic. In a stable environment, Khatri and Ng note, "data are more reliable [and] there is not much pressure to collect data quickly."[352] Furthermore, as David L. Hamilton and Robert K. Gifford describe people's tendency to rely heavily on illusory correlation when making judgments. Illusory correlation "refers to an erroneous inference about the relationship between two categories of events." The study concluded that "distortions in judgments can result in the cognitive mechanisms involved in processing information

[350] Amos Tversky and Daniel Kahneman, "Availability: A Heuristic for Judging Frequency and Probability," pp. 207-232.
[351] Naresh Khatri and H. Alvin Ng, "The Role of Intuition in Strategic Decision Making," *Human Relations,* vol. 53, no. 1 (January, 2000), p. 64.
[352] *Ibid,* p. 63.

about co-occurring events, at least when the various events co-occur with differential frequencies."[353]

The reliance on illusory correlations suggests two things: First, Khomeini's decision to cancel the program was probably a reflection of his association of the program with the Shah's reliance on the West. In this regard, the Islamic Republic's tenets of self-sufficiency and political independence were the two most critical subjective variables influencing decision-making. Second, during the Iran-Iraq war, the decision-making environment was atypical, requiring rapid decision-making about the best way to fight and win the war. This resulted in the turn to nuclear weapons. Yet despite the decision to proliferate, the need for political and technological independence remained important. For example, after Iran concluded its first agreement for the procurement of nuclear technology from AQ Khan, it opted to first try and procure and construct the related equipment on its own, rather than import complete machines.

After the war ended, the key decision-makers responsible for the 1984 decision to proliferate (Khamenei being the most prominent) remained in place; suggesting a link between these individuals' conceptions of nuclear weapons and Iranian nuclear policy, independent of the threat environment. As such, Lavoy's notion of "nuclear mythmaking," whereby elites convince key decision-makers about the saliency of nuclear weapons helps provide greater insight into Iran's post-Iraq war nuclear program. As of 1988, Iran had internalized the need for nuclear weapons, resulting in the continuance of the nuclear program. The key decision-makers sat atop the bureaucracy, thus wielding

[353] David L. Hamilton and Robert K. Gifford, "Illusory Correlation in Interpersonal Perception: A Cognitive Basis of Stereotypic Judgments," *Journal of Experimental Social Psychology,* vol. 12, no. 4 (July, 1976) pp. 392–407.

tremendous influence over the direction of Iran's nuclear program. William Samuelson and Richard Zackhauser, in the article *Status Quo Bias and Decision-Making*, found:

> Despite a desire to weigh all options evenhandedly, a decision maker in the real world may have a considerable commitment to, or psychological investment in, the status quo option. The individual may retain the status quo out of convenience, habit or inertia, policy (company or government) or custom, because of fear or innate conservatism, or through simple rationalization.[354]

This description of decision-making helps further elucidate the cause of Iran's 1988 decision to continue with its nuclear program, despite the end of the war with Iraq. The key leadership remained in place; between 1985-1988 these key officials had internalized the need for nuclear weapons; once the decision was made, status quo bias kept the program in place.

The change came only after a major event – the 2002 revelation and subsequent concerns about military action – forced a political change. In this regard, the hitherto rationalization for the program changed, owing to a different set of inputs influencing leadership decision-making. This change empowered so-called moderates more amenable to compromise, ostensibly to ensure that Iran's security was not compromised by the tool – a nuclear weapon – that more hardline elites had envisioned using to deter future WMD attacks.

Conclusion

The role of individuals and the subjective variables inherent in decision-making explains the differences between Turkish and Iranian nuclear decisions. The relationship between X (input) and Z (policy) is the way in which the key decision-makers respond to and then ultimately make nuclear decisions (Y). This means that X (input) does not

[354] William Samuelson and Richard Zackhauser, *Status Quo Bias and Decision-Making,* Journal of Risk and Uncertainty, vol. 1, no. 1 (Spring, 1988), pp. 9-10.

always lead to Y (nuclear decision) resulting in the same Z (policy). In the cases of Iran and Turkey, the decisions correlated with the leaders unique worldview. The Shah, for example, judged inputs through the prism of his fear of Arab nationalism, and thereby discounted the salience of nuclear weapons, so long as nonproliferation norms could be trusted to prevent the spread of nuclear weapons. In fact, the Iranian monarch "cooked the books" so to speak by commissioning biased reports to fit his conception of nuclear energy.

Khomeini's rejection of the West, in turn, was the key reason for his nuclear decisions between 1979 and 1984. The introduction of WMD forced the Iranian leader to make a non-routine decision, which psychological research suggests results in leaders relying on the availability of the heuristic. In the case of revolutionary Iran, these heuristics reflected the leadership's understanding of the world – and were thereby linked to the aforementioned tenets of the Revolution. From this perspective, nuclear weapons are seen as a natural tool to gain independence. Yet, in a clear reflection of Iran's emphasis on technological independence, the leadership opted for a rather unorthodox path to the bomb; choosing to only purchase a list of components and a few centrifuge machines, rather than a turn-key plan from the AQ Khan network. Other known proliferators, like Libya, opted for the latter approach. Iran, by contrast, wanted to develop the technologically indigenously from documents purchased from Khan.

To be clear, Iran's troubles doing so forced the leadership to return to the Khan network in 1994, but it was only after its internal efforts failed did Iran re-evaluate its policy. This approach suggests that the prevalence of status quo bias is critical for understanding the trajectory of Iran's program. The leadership's policy only changed in

reaction to Iran's policy of indigenous development failing, perhaps best evidenced by Iranian decision to return to the Khan network in 1994 for more assistance with centrifuge development.

The prevalence of status quo bias also elucidates the key variables influencing Turkish decision-making. As of 1977, Turkey's economic situation and nuclear energy plans required substantial vendor financing. For this reason, the pre-Ozal governments pushed for a vendor-financing model. Thereafter, in 1983, the economic oriented Ozal sought to use the electricity sector to attract foreign investment; thereby viewing nuclear energy as an extension of a far broader policy to attract much needed FDI. Subsequent Turkish leaders, regardless of their political outlook, adopted the same policy. This continuity suggests status quo bias continues to influence key Turkish decision-makers and that nuclear energy is still viewed through the prism of the country's overarching efforts to attract FDI through privatization and foreign investment in critical infrastructure projects. Indeed, the BOO model is the financing model of choice for every major Turkish infrastructure project, ranging from the construction of shopping malls, bridges, airports, and the two nuclear power plants.

Based on this information, this study argues that it is possible to put together a new model of proliferation behavior. To properly understand how a state will respond to X input, one must first identify the key subjective variables that individual leaders rely upon when formulating policy. These variables, in turn, create a natural framework from which to draw conclusions about the likely direction of state policy – and thus allows for more accurate proliferation forecasting. Thus, in general, economic concerns will frame Turkish policy responses to various inputs, whereas Iranian leaders will strive for

political/technological independence. These key subjective variables, in turn, help elucidate the way in which each country's leadership views key security challenges, or issues related to global nonproliferation norms.

Findings: The Dynamics of Decision-Making in Iran and Turkey

Traditional explanations for proliferation decision-making are based on a simple assumption: In an anarchic environment, state X will choose to pursue/forego nuclear weapons for Y reason. Therefore, when exposed to Y reason, other states will implement similar policies. Building upon this assumption, the dominant explanations for proliferation and restraint rest on a common set of assumptions: the international system is anarchic, states act in their own interests, and that the unit of analysis should be the state.

Neo-realist/realist theorists therefore contend that states will seek out nuclear weapons to maximize state power, or as a tool to balance against a nuclear armed/nuclear latent rival state. The dominance of realism/neo-realism in the nonproliferation field has resulted in the widespread belief of reactive proliferation, whereby the acquisition of nuclear weapons in one state will ultimately result in regional proliferation "chains". Yet despite consistent pessimistic assumptions about the inevitably of rapid proliferation, few states have actually chosen to develop nuclear weapons.

To account for this nuclear restraint, constructivist and neo-liberal scholars argue that states take norms into account when devising nuclear policy. In turn, the internalization of a norm against proliferation and/or the actual use of nuclear weapons have rendered the weapon obsolete. As such, all but a few states have turned to nonproliferation norms/treaties for security; obfuscating the need for nuclear weapons. Solingen, in her seminal work on proliferation, put forward another argument, wherein proliferation decision-making is dependent on the regime's "mode of political survival".

Inward oriented states, Solingen notes, are more likely to proliferate, whereas outward oriented states are more likely to accept nonproliferation norms.

This study found that Turkish and Iranian nuclear decision-makers respond differently to similar inputs. As such, the unit of analysis in the aforementioned studies – the state – is inadequate to identify the nuances inherit in nuclear weapons/energy decision-making. Instead, policy decisions reflect the approach taken by key decision-makers – and are thus beholden to the inherent biases (the availability of the heuristic) of the leaders empowered to make nuclear decisions.

Hence, when faced with similar inputs, this study found that similar states respond differently to these challenges. Thus, this study's hypothesis is null: Similar inputs *do not* result in similar nuclear decisions.

Furthermore, the data indicates that that nuclear decision-making is multi-causal and therefore cannot be explained using one single nonproliferation theory. The theories tested in the previous three chapters do explain certain instances of Turkish and Iranian nuclear decision-making. However, they fail to capture the nuance and reasons for each nuclear decision – and thus cannot be relied upon to derive a definitive conclusion about the causes of nuclear decision-making in both Iran and Turkey. Instead, this study found that the tendency to use the state as the unit of analysis is inadequate to capture the reasons for/and why Turkey and Iran made different nuclear decisions when faced with a similar input.

As such, the method of analysis Hymans and Lavoy put forward – the individual – has more relevance when identifying the reasons for nuclear decision-making in different states. Furthermore, this study also found that nuclear decisions reflected the

individual conceptions of security and nonproliferation norms; and thus the policies adopted were curtailed around an individual's understanding of the specific inputs. Iran and Turkey, for example, viewed regional threats differently. These differences, in turn, influenced nuclear policy. Similarly, both Ankara and Tehran thought of nonproliferation differently during the 1970s, and since 1985 have pursued opposite policies.

Moreover, once a decision was made, subsequent leaders followed a similar policy regardless of the inputs. Iran's decision to break with the previous adoption of nonproliferation, ostensibly for a combination of security and normative reasons, is a key data point that helps shed light on the role of individuals in shaping radical policy changes. For example, even though Iran had made the decision to acquire nuclear weapons, the leadership's policy reflected a continued emphasis on technological independence; a key tenet of the Islamic Revolution. This decision delayed the advancement of the program, but nevertheless was the key subjective variable that underpinned the implementation of this policy between 1985 and 2003. Taken together, this data suggests that even during times of radical policy changes, individual preferences continue to influence policy-making.

Thus, even though similar states may end up adopting the same policy – signing and ratifying the NPT, for example – the reasons for doing so may be completely different. This was certainly true for Iran and Turkey. More broadly, the identification of the reasons for policy-decision helps to address a key lacuna in nonproliferation scholarship; namely the dynamics of proliferation, or the reasons why states adopt specific nuclear policies. To discern the reasons for nuclear decisions, this study found that one has to account for the subjective variables influencing nuclear decision-making –

and how those subjective inputs influence policy makers; and are then reflected in the policy-making process.

These variables, in turn, influence the key decision-makers, and ultimately shape policy decisions. Thus, per Hymans' argument, a leader that has an affinity for nuclear weapons is more likely to proliferate, if presented with the justification to do so. That justification could stem from security related concerns or be a result of the key decision-maker's deeply ingrained belief in the salience of nuclear energy/weapons for prestige reasons. Similarly, leaders who associate nuclear energy with economic development and/or energy independence are more willing to accept positive reports about the technologies benefits and dedicate state resources to procuring or developing a reactor.

This study also found that nuclear myths are often used to justify the leader's pre-conceived conception about the value of nuclear energy/weapons. Thus, if a leader has a positive association of nuclear energy and/or weapons, then he will use widely held myths to justify his nuclear decisions. This suggests that, as Lavoy argues, mythmaking plays a role in an individual's understanding of nuclear related issues. However, in the cases of Iran and Turkey, the leadership propagated the myth, rather than a powerful person in the bureaucracy. This centralized decision-making meant that the programs in both countries reflected the priority given to it by the most important decision-makers. This study has thus tentatively concluded that policies reflect the point of view of key-decision-makers. And thus the myths used to justify those polices are likely to have been internalized by the leaders who used them in the first place to frame policy decisions.

The Shah, for example, was apathetic to nuclear energy related issues during the 1960s. Thus, between 1957 and 1972, Iran's program was confined to University level

research, per the ambitions of its largest supporter: Shah confidante and Tehran University chancellor, Manoucher Eqbal. The program's focus changed after the Shah prioritized the development of nuclear energy in the early 1970s. The specific reasons for the Shah's nuclear change of heart are unclear, but the data suggests that the Shah made the decision to try and conserve oil for export in 1972. This decision prompted the turn towards nuclear as the principle means with which replace fossil fuels for power production. To support this proposal, the Iranian monarch relied upon a series of industry-drafted reports to justify his ambitious plan. The decision was thus based on flawed data and served as a feedback loop, whereby the data served to validate pre-conceived notions about the value of nuclear energy.

Similarly, the Islamic Republic's nuclear program also reflected the vision of its most important decision-maker, Ayatollah Khomeini. The program was therefore cancelled in 1979, and later resuscitated in 1984 to support a dual pronged program aimed at developing the front end of the fuel cycle and nuclear weapons development. The Islamic Republic's initial decision-making between 1979 and 1984 suggests that prototypical oppositional nationalist leaders, like Ayatollah Khomenei, do not necessarily "want the bomb", as Hymans suggests. This indicates that, indeed, there may be a trigger that results in "those more likely to proliferate" making a decision about a weapons program. Yet, that "trigger" is also dependent on a key-decision maker's perception of a specific input. In this instance, Iran's concern about a future Iraqi nuclear weapon did not trigger the decision to proliferate, but rather the combination of international isolation, western acquiescence to Iraqi chemical weapons attacks, and the WMD attacks themselves all appear to have played a role in changing Khomeini's approach to

nonproliferation. Thus, a leader can "learn to love the bomb" if properly predisposed and pushed in that direction by a unique set of circumstances.

The notion of a security threat, for example, is dependent upon the point of view of the key decision-maker – and is thus not the only cause of (non)proliferation decision-making. For Turkey, the Soviet Union was viewed as an existential threat. The Shah, by contrast, engaged in a policy of détente with the Soviet Union. Yet, while Turkey largely ignored the Middle East, the Shah believed that the threat of Arab nationalism posed the greatest risk to Iranian national security. As such, both countries viewed tangential security related issues, like the American policy vis-à-vis Cyprus and Pakistan, differently. These key divergences resulted in two different nuclear weapons' policies – and, by extension, different potential proliferation triggers. Turkey incorporated nuclear weapons into its defense plans and ultimately relied upon them to deter a Soviet invasion. Iran, by contrast, turned down an American offer to use nuclear weapons to defend the Zagros line, choosing instead to focus on the procurement of advanced conventional arms.

The Turkish policy resulted in Ankara shunning the NPT, whereas the Shah signed the document to help prevent proliferation in the Middle East. Ankara viewed the NPT as an affront to its own reliance on nuclear weapons for defense and thus resisted signature of the document for as long as possible. Turkey eventually reversed course on the NPT in 1977, after the formulation of supplier guidelines and Ankara's nuclear energy ambitions required signature.

Iran's early adoption of nonproliferation stemmed from the Shah's concerns about proliferation in the Arab Middle East. To ensure Iran's conventional superiority, the Shah

ultimately decided on a policy of support for the NPT. This policy stemmed from the Shah's concerns about maintaining Iran's military superiority over its Arab neighbors, rather than the Soviet threat. As such, the NPT was a worthwhile document to prevent proliferation. This meant that Iran had few disincentives to sign a treaty that had the support of its most important ally, the United States; from which it depended upon for the conventional weapons it needed to maintain military superiority in the Gulf.

The two countries also launched nuclear energy programs in 1973. Iran benefited from the dramatic increase in global energy prices. The rapid infusion of petro –dollars allowed for the Shah to finance his nuclear program – and most importantly, attract foreign vendors to assist with the development of the program. The dramatic increase in energy prices triggered an economic crisis in Turkey, which ultimately forced the government to diversify its sources of energy. This focus on nuclear energy eventually resulted in Turkey changing its approach to the NPT. To attract financing for a planned nuclear research center – and to allow for the export of nuclear equipment from NSG countries – Turkey signaled its support for the NPT in 1977.

Yet, despite this willingness to support nonproliferation norms, Ankara's lack of foreign currency prevented the country from attracting the major nuclear energy vendors. These dynamics point to a serious divergence in the formulation of nuclear policy in both countries: Iran is able to rely on its oil largess to finance its nuclear ambitions, whereas Turkey has to rely on creative financing mechanisms to address its economic weaknesses. This key divergence explains Turkish decision-making after the 1980 military coup. Turgut Ozal formally codified Turkey's vendor financing model in 1983, which thus elevated the importance of economic/financing concerns for civil nuclear decision-

making. This model has continued to be used by all subsequent Turkish politicians, which indicates that economic/financing concerns continues to be the most important variable underpinning civil nuclear energy decision-making.

The Islamic Republic, by contrast, opted to cancel the nuclear program in 1979. The Shah's reliance on western nuclear companies to implement the country's nuclear policy explains the reasons for the program's cancellation. Khomeini, speaking from exile in France just before his return to Tehran, had said in January 1979 that all business contracts with American and foreign countries should be reviewed and that those that "went against the interest of [the Iranian] people should be cancelled."[355]

Upon returning from exile, Khomenei appointed a political loyalist to lead the AEOI and ultimately decided to cancel much of the Shah's ambitious nuclear program (which had run into financing issues related to global energy prices in 1978.) This decision – which coincided with the start of the Iran-Iraq war – suggests two things: First, Iran's bombing of Iraq's nuclear facilities during the opening days of the war indicates that there was concern about the development of nuclear weapons in Iraq. Nevertheless, Iran took no initial step to proliferate. Second, Khomeini was a prototypical oppositional-nationalist, and per Hymans' argument, should have wanted the bomb. Khomenei's decisions, however, suggest that the key drivers of early nuclear decision-making stemmed from the subjective association of the nuclear program with the Shah, and the Iranian monarch's reliance upon the West for critical nuclear technology.

The decision to proliferate stemmed from two interrelated events: First, the Iraqi use of chemical weapons prompted the Iranian leadership to consider nuclear weapons.

[355] Paul Lewis, "Khomeini Demands Review of Iran's Foreign Deals: Ayatollah Will Visit Cemetery," *New York Times*, January 22, 1979, p. A11.

Second, this decision was based in part on the failure of the nonproliferation regime – and the international community as a whole – to condemn and/or stop the Iraqi chemical attacks. These concurrent issues prompted the Iranian leadership to conclude that the nonproliferation regime was subservient to the geopolitical ambitions of the world's great powers; most of which were hostile to the Islamic Republic. Thus, while Turkey had begun to embrace nonproliferation norms, Iran was moving in the opposite direction (albeit after having settled on nonproliferation between 1979 and 1984).

However, in an indication of how Iran's emphasis on technological independence guides state decision-making, Iran sought to maintain its independence whilst developing enrichment technologies. Rather than pursue the turn-key approach to the front end of the nuclear fuel cycle like Libya, Iran chose to purchase the list of the AQ Khan network's European suppliers for centrifuge components. This decision resulted in a slow development process and eventually forced Iranian decision-makers to procure 500 complete centrifuges directly from the Khan network in the mid-1990s.

The data suggests that whereas Turkey has elevated financing concerns when making nuclear decisions, the Islamic Republic is determined to gain technological independence from the West - even if this policy slows down the realization of specific policy goals. The Iranian leadership has subsequently used this ex-post facto rationalization to describe its clandestine nuclear activities. Iran's focus on independence also framed the internal Iranian debate about nuclear policy after the 2002 revelation of its once clandestine nuclear program.

During the intra-government policy debates, a schism emerged: Iranian moderates advocated for greater transparency, whereas more conservative elements advocated for a

more hardline position vis-à-vis cooperation with the West. Despite this disagreement, both sides advocated for Iran retaining the right to enrichment. The direction of Iran's post-2002 policy included input from numerous decision-makers. The final decision was left to Ayatollah Khamenei. Faced with this intra-governmental disagreement, Iran's Supreme Leader decided on a diplomatic compromise, wherein elements of the weapons program remained in place. The Iranian Foreign Ministry was given some leeway to reach a comprehensive agreement with the West. The enrichment issue remained a redline, and ultimately was used as means with which to propagate the tenets of the Revolution.

These two cases indicate that nuclear decision-making is multi-causal and ultimately based on an individual's conception of key external inputs. In both Iran and Turkey, nuclear policy reflected the conception of similar inputs; and thus resulted in different policies to address similar challenges. These divergences further suggest that the dynamics of proliferation/nonproliferation are country specific, rather than based on a universal model. Related to this, this study also found that there is not a universal trigger/restrain that explains proliferation decision-making.

Thus, to build a more accurate proliferation model, this study found that scholars must first identify key decision-makers and then determine which variables influence policy-making. Such a determination allows for the identification of these drivers of decision-making – an indeed what a potential nuclear trigger may be. These decisions help inform the likely courses of action individuals will take when presented with different inputs. This study, for example, found that Turkish leaders weigh economic considerations when making security related decisions – and are thus more likely to adopt

policies that do not undermine its economic interests. The Iranian leadership has consistently shown that economic considerations are secondary to the perceived benefits of resistance to the West and other nebulous tenets of the revolution. This study tentatively concluded that this approach to policy-making stems, at least in part, from the two countries' different economic models. Iran, as a rentier state, simply had more cash on hand than Turkey, and thus has the luxury of making decisions without taking into account how the policies would upset the economy.

These key divergences help explain why these two similar states responded differently to similar inputs. Key decision-makers have a different understanding and solutions to similar events. These key differences result in different policies and thus call into question whether there is an all encompassing model – or universal trigger – for proliferation decision-making. Certainly, in the cases of two similar states, Iran and Turkey, leaders made different decisions when addressing similar inputs.

Aggregate Data

Year	Nuclear Decision	Nuclear Energy/Nuclear Weapons	Reason for Decision
Turkey (Aggregate)			
1954	After Atoms for Peace announced, Turkey first approached US about nuclear energy	Nuclear Energy	Economic
1955	Conclude nuclear agreement with US	Nuclear Energy	Economic
1956	Inquire about nuclear weapons	Nuclear Weapons	Security
1957	Support NATO communiqué	Nuclear Weapons	Security/Alliance Management
1957	First dual capable delivery system - the Honest John - is deployed in Turkey. The US begins to train Turkey to use the system	Nuclear Weapons	Security
1959	Sign Nuclear weapons agreement	Nuclear Weapons	Security
1959	Turkey first articulates its nuclear weapons policy	Nuclear Weapons	Security
1962	Cuban Missile Crisis: Resist US policy of trading Jupiters in Turkey for Soviet nuclear weapons in Cuba	Nuclear Weapons	Security

1963	Submarine port visit to Izmir	Nuclear Weapons	Security/Alliance Management
1964	TAEC formulates its first plan for nuclear energy	Nuclear Energy	Economic
1967	Turkey resists signing the NPT over concerns about pre-delegation and NATO nuclear weapons guarantees	Nuclear Energy/Weapons	Security/Supplier Related
1967	Atomic Demolition Munition War Plan	Nuclear Weapons	Security/Alliance Management
1969	Turkey signs the NPT, but does not ratify it	Nuclear Weapons/Nuclear Energy/Nonproliferation	Security
1972	TAEC revisits its 1964 plan to develop nuclear energy	Nuclear Energy	Economic
1976	Negotiations with Sweden begin	Nuclear Energy	Economic
1977	Express desire to sign and ratify NPT	Nuclear Energy/Weapons	Economic/Supplier Related
1979	Turkey ratifies the NPT	Nuclear Weapons/Nuclear Energy/Nonproliferation	Economic/Supplier Related
1979	Turkey expresses support for introduction of Pershing missiles in Europe	Nuclear Weapons	Security/Alliance Management
1980	Sweden cancels nuclear talks with Turkey	Nuclear Energy	Economic
1981	Concludes IAEA safeguards arrangement	Nuclear Weapons/Nuclear Energy/Nonproliferation	Economic/Supplier Related/Nonproliferation /Norms Building
1982	Reissue Akkuyu tender	Nuclear Energy	Economic
1983	Tender terms finalized, but then reissued in line with new legislations	Nuclear Energy	Economic
1983	Signs three letters of intent: AECL, KWU (Akkuyu); General Electric (Sinop)	Nuclear Energy	Economic/Supplier Related
1984	General Electric withdraws, citing turkey's financing legislation	Nuclear Energy	Economic/Supplier Related
1984	Final negotiations with KWU for Akkuyu	Nuclear Energy	Economic
1985	Negotiations with AECL begin, after KWU balked at Turkey's financing requirements	Nuclear Energy	Economic
1986	Turkey alters BOT law	Nuclear Energy	Economic/Supplier Related
1986	Ankara expresses an interest in acquiring fuel fabrication technology; explores mining for uranium	Nuclear Energy	Economic/Supplier Related
1988	Negotiations with Argentina begin	Nuclear Energy	Economic
1990	Argentina and Turkey announced their intention to form a joint company to oversee the development of a larger 25 MW Carem LWR	Nuclear Energy	Economic
1991	NATO decides to decrease the total number of tactical nuclear weapon, leaving some 700 gravity bombs in Europe	Nuclear Weapons	Security/Alliance Management
1991	Nuclear artillery shells are removed from Turkish territory	Nuclear Weapons	Security/Alliance Management

1992	Nuclear weapons removed from Eskisehir air base, leaving nuclear weapons in three Turkish airbases: Akinci/Murted, Balikesir, and Incirlik	Nuclear Weapons	Security/Alliance Management
1994	BOT legislation updated	Nuclear Energy	Economic/Supplier Related
1994	Tansu Ciller issues a decree creating the pathway to BOO	Nuclear Energy	Economic/Supplier Related
1995	US nuclear weapons consolidated at one air base: Incirlik.	Nuclear Weapons	Security/Alliance Management
1995	Turkey decertifies its DCAs	Nuclear Weapons	Economic/ Alliance Management
1996	Ciller's decree is overturned	Nuclear Energy	Economic/Supplier Related
1996	MUNSS Teams leave Akinci and Balikesir	Nuclear Weapons	Security/Alliance Management
1997	Turkey re-launches nuclear tender	Nuclear Energy	Economic
1998	Turkey delays a decision on the 1997 tender, owing to upcoming elections, and supplier disinterest	Nuclear Energy	Economic/Supplier Related
1999	Turkey announces that it will select a winner for the 1997 tender in October 2000, despite a recent earthquake	Nuclear Energy	Economic/Supplier Related
1999	Turkey signs and ratifies the Comprehensive Nuclear Test Ban Treaty	Nuclear Weapons//Nonproliferation	Security/Nonproliferation Norms
2000	Turkey defers on making a decision in its latest nuclear tender	Nuclear Energy	Economic/Supplier Related
2000	Turkey signs the Additional Protocol, ratifies it a year later in 2001	Nuclear Weapons/Nuclear Energy/ Nonproliferation	Security/Nonproliferation Norms
2001	Turkey cancels the 1997 tender	Nuclear Energy	Economic
2005	Ankara turns down a US offer to permanently station US DCAs in Turkey	Nuclear Weapons	Security/Alliance Management
2006	Turkey begins informal discussions with AECL for Akkuyu	Nuclear Energy	Economic/Supplier Related
2008	Turkey updates BOO law	Nuclear Energy	Economic/Supplier Related
2008	Turkey makes clear that it prefers a take back provison; also expresses interest in developing thorium fuel cycle	Nuclear Energy	Economic/Supplier Related
2008	Ankara expresses an interest in becoming a regional fuel fabrication center, but rules out enrichment	Nuclear Energy	Economic/Supplier Related/Nonproliferation
2008	Turkey objects to US backed NSG proposal to black certain nuclear exports	Nuclear Energy	Economic/Supplier Related/Nonproliferation /Treaty Interpertation
2008	Despite lack of interest and political instasbility, Turkey announces that it will proceeed with nuclear tender	Nuclear Energy	Economic/Supplier Related
2008	Turkey begins to review Russia proposal	Nuclear Energy	Economic/Supplier Related
2009	Turkey expresses its displeasure with Russia's bid and cost per-kWh	Nuclear Energy	Economic/Supplier Related

2009	Turkey cancels the tender negotiations with Russia	Nuclear Energy	Economic/Supplier Related
2010	Turkey chooses to forego tender process, in favor of direct bilateral negotiations	Nuclear Energy	Economic/Supplier Related
2010	turkey and Russia reach a preliminary agreement for the Akkuyu site	Nuclear Energy	Economic/Supplier Related
2010	Turkey agrees to NSG clean text; thus overcoming its intial reluctance on US backed language to 'black box' certain nuclear exports	Nuclear Energy	Economic/Supplier Related/Nonproliferation /Treaty Interpertation
2010	Turkey signs an MOU with South Korea for nuclear cooperation; begin discussions about Sinop	Nuclear Energy	Economic/Supplier Related
2010	Negotiations with South Korea's KEPCO collapse; Ankara begins talks with Japan's Toshiba	Nuclear Energy	Economic/Supplier Related
2011	Ankara's freezes its talks with Toshiba; signs an MOU with SNC-Lavalin	Nuclear Energy	Economic/Supplier Related
2012	Turkey signs an MOU with China	Nuclear Energy	Economic/Supplier Related
2013	Mitsubishi and Itochu begin negotiations with Ankara	Nuclear Energy	Economic/Supplier Related
2013	Mitsubishi-Itochu-Areva consoritum selected to begin exclusive bilateral negotiations	Nuclear Energy	Economic/Supplier Related

Year	**Nuclear Decision**	**Nuclear Energy/Nuclear Weapons/Nuclear Research**	**Reason for Decision**
Iran (Aggregate)			
1955	The Majlis approved $132,000 for the nuclear research laboratory at the University of Tehran	Nuclear Research	Nuclear Research
1955	Iran first approaches the United States about Atoms for Peace cooperation	Nuclear Research	Economic/ Nuclear Research
1956	Manoucher Eqbal travels to the United States, meets with NGOs and asks for funding for University of Tehran nuclear research center	Nuclear Research	Nuclear Research
1956	The Iranian ambassador to Washington, Ali Amini, was authorized to send a formal letter to Secretary of State Dulles indicating a desire to begin negotiations on a nuclear cooperation agreement.	Nuclear Energy	Nuclear Research
1956	Iran and the U.S. agree to delay the signing of the Atoms for Peace Agreement after the Shah expressed an interest in maximizing political theatrics	Alliance Management/Nuclear Research	Political
1957	Iran and Turkey sign the Atoms for Peace Agreement	Alliance Management/Nuclear Research	Nuclear Research/Alliance Management
1957	Iran sent scientists to Baghdad for training at British run nuclear research center	Nuclear Research	Nuclear Research
1958	Iran agrees to host CENTO nuclear research center after overthrow of King Faisal	Nuclear Research	Nuclear Research/Alliance Manageme

			nt
1959	The Majlis ratified the Atoms for Peace agreement after numerous bureaucratic delays	Alliance Management/Nuclear Research	Nuclear Research/Alliance Management
1959	US and Iran discuss the use of nuclear weapons to defend against Soviet attack	Nuclear Weapons/Alliance Management	Security/Alliance Management
1959	The Shah refused to consider the US plan, which included nuclear weapons	Nuclear Weapons/Alliance Management	Security/Alliance Management
1969	Iran signed the NPT	Nonproliferation/Alliance Management	Security/Alliance Management/Nonproliferation
1972	The Shah directed the Ministry of Water and Power to develop a feasibility study for the development of a nuclear energy program.	Nuclear Energy	Nuclear Energy/Economic
1974	Shah gives his Norouz address outlining the country's nuclear energy plan	Nuclear Energy	Economic/ Political
1974	The Shah creates the AEOI	Nuclear Energy	Economic/ Political
1974	Iran concluded a "super turn key" agreement with Germany for the sale of two reactors at Bushehr	Nuclear Energy	Nuclear Energy/Supplier Dynamics
1974	The Shah articulates his approach to nonproliferation and nuclear weapons	Nuclear Weapons/Nonproliferation/Alliance Management	Security/Alliance Management/Nonproliferation
1974	Iran begins nuclear cooperation negotiations with the United States	Nuclear Energy	Nuclear Energy/Alliance Management
1974	Iran signs a nuclear cooperation agreement with France	Nuclear Energy	Nuclear Energy/Supplier Relations
1974	Iran allocates $300 million to construct a nuclear research center. Construction began in 1975	Nuclear Energy/Nuclear Research	Nuclear Energy/Supplier Relations
1975	Work began at Bushehr, despite the fact that the two sides had yet to sign a nuclear cooperation agreement	Nuclear Energy	Nuclear Energy/Supplier Dynamics/ Economic
1975	Iran begins to explore laser enrichment after being approached by Jeff Eerkens	Nuclear Research	Nuclear Research/Supplier Dynamics
1975	Iran signed an agreement with EURODIF	Nuclear Energy	Nuclear Energy/Supplier

			Relations
1976	France and Iran reached an agreement for the supply of two nuclear reactors to be built at Darkhovin near the city of Ahwaz on the Karun River	Nuclear Energy	Nuclear Energy/Supplier Relations
1976	Iran and Germany signed a nuclear cooperation agreement, after overcoming American led issues about reprocessing	Nuclear Energy	Nuclear Energy/Supplier Relations
1977	The Majlis ratified the nuclear cooperation agreement with Germany	Nuclear Energy	Nuclear Energy/Supplier Relations
1977	Iran and Germany signed a declaration of intent for the construction of four air-cooled reactors at a site in the Isfahan area near the town of Saveh	Nuclear Energy	Nuclear Energy/Supplier Relations
1978	Iran changed the financing terms with France and reached an agreement to pay for the reactors with oil.	Nuclear Energy	Nuclear Energy/Economic/Financing
1979	Announced that the $6.3 billion contract for the construction of two reactors at the Darkhovin site and the ENTEC research center with France had been cancelled	Nuclear Energy/Nuclear Research	Economic/ Political
1979	The new leadership in Tehran appointed Fereydun Sahabi as undersecretary of the ministry of energy and head of the AEOI. He has no nuclear experience	Nuclear Energy/Nuclear Research	Political
1979	the Islamic Republic of Iran peremptorily abolished the nuclear development program	Nuclear Energy	Economic/ Political
1980	Iran cancels work at Bushehr, but indicates it will continue to explore uranium minding	Nuclear Energy/Nuclear Research	Economic/ Political
1980	Iranian jets target Iraq's nuclear reactor	Security Concerns	Counter proliferation
1981	The AEOI begins experiment with uranium conversion and reduction.	Nuclear Research	Nuclear Research/Political/Bureaucratic
1981	The AEOI reaches an agreement with France for the supply of conversion equipment	Nuclear Research	Nuclear Research/ Political/Bureaucratic
1982	The Islamic Republic revisits its nuclear program and expresses an interest in continuing work at Bushehr	Nuclear Energy	Political
1982	Parliament Speaker Akbar Hashemi Rafsanjani led a parliamentary delegation (including today's president Hassan Rouhani) to New Delhi where they discussed nuclear cooperation	Nuclear Energy/Nuclear Research	Nuclear Energy/Supplier Relations/ Political
1983	the Islamic Republic approached Argentina for help with procuring conversion equipment and fuel fabrication for use at the Isfahan Nuclear Technology Center	Nuclear Energy/Nuclear Research	Nuclear Energy/Supplier Relations/ Political
1985	Iran signs a secret nuclear cooperation agreement with China	Nuclear	Nuclear

		Energy/Nuclear Research	Energy/Supplier Relations/ Political
1985	Iran begins centrifuge R&D	Dual Use	Political/Security
1985	Iran reaches out to numerous EU suppliers for a lathe machine, presumably to assist with centrifuge fabrication	Dual Use/Nuclear Research	Dual Use/Nuclear Research/ Supplier Dynamics
1986	a high level Iranian delegation, comprising President Khamenei, Foreign Minister Velayati, and Construction Jihad Minister Bijan Zangenh, met with Pakistani President Zia al-Haq to inquire about purchasing fuel cycle equipment	Dual Use	Dual Use/Political
1986/1987	Iranian officials meet with AQ Khan representative; acquiring technical schematics and centrifuge equipment for a centrifuge facility as well as a list of illicit suppliers in Europe, the Middle East, and East Asia, for which Tehran reportedly paid $3 million	Dual Use	Dual Use/Political
1987	Iran and Pakistan sign a nuclear cooperation agreement, without Pakistan agreeing to export centrifuge technology	Nuclear Energy/Nuclear Research	Nuclear Energy/Supplier Relations/ Political
1988-1993	Iran experiments with polonium and seperates plutonium	Dual Use/Nuclear Research	Dual Use/Nuclear Research
1988	Iran's Sharif University tries to purchase a mass spectrometer from a Swiss company	Dual Use/Nuclear Resarch	Dual Use/Nuclear Resarch/Supplier Dynamics
1989	Lavizan Shian is opened. The site is managed by an entity known as the PHRC, and run by Seyyed Abbas Shahmoradi-Zavareh	Dual Use/Nuclear Research/Nuclear Weapons	Dual Use/Nuclear Research
1990	Sharif University sent three identical telexes to Thyssen, Bakker Madava, and Magnet Applications for magnets similar in size to the P-1	Dual Use/Nuclear Research	Dual Use/Nuclear Research/ Supplier Dynamics
1990	Sharif university sent two more telexes to Air Products, a British supplier of fluorine gas, 10 kilograms of “mega-grade” sulfur hexafluoride. The gas is sometimes used as a stand-in for UF6`	Dual Use/Nuclear Research	Dual Use/Nuclear Research/ Supplier Dynamics
1991	The AEOI begins laser enrichment work - a program that dates back to the 1970s. Iran used 30kg of uranium metal for experiments.	Dual Use/Nuclear Research	Nuclear Research/ Dual Use

1991	China and Iran sign a more formal nuclear cooperation agreement	Nuclear Energy/Nuclear Research	Nuclear Energy/Supplier Relations/ Political
1992	Iran and Russia reach an agreement to complete the Bushehr reactor	Nuclear Energy	Nuclear Energy/Supplier Relations/ Political
1993	Bukhari Sayed Abu Tahir, a businessman in Dubai representing the Khan network, approached a private company in Iran with an offer to sell centrifuge technology originally intended for Libya.	Dual Use/Nuclear Research	Nuclear Energy/Supplier Relations/ Political
1993	The AEOI begins more comprehensive centrifuge work	Dual Use/Nuclear Research	Dual Use/Political
1994	Iran recieves a duplicate set of drawings for the IR-1 centrifuge, along with components for 500 centrifuges. Iran receives the final delivery in 1996.	Dual Use/Nuclear Research	Dual Use/Nuclear Research/ Supplier Dynamics
1995	Russia and Iran conclude a secret addendum to the nuclear cooperation agreement that included a commitment to assist Tehran with its uranium mining efforts and to provide it with a turnkey gas centrifuge facility.	Dual Use/Nuclear Energy	Nuclear Energy/Supplier Relations/ Political
1995	After American intervention, Russia voids the secret addendum and its decision to provide a centrifuge facility. Russia agrees to supply Bushehr with nuclear fuel	Nuclear Energy	Nuclear Energy/Supplier Relations/ Political
1995	Russia's Scientific Research and Design Institute of Power Technology (NIKIET) and the D. Mendeleyev University of Chemical Technology continue to cooperate with Iran	Dual Use/Nuclear Research/Nuclear Energy	Nuclear Energy/Supplier Relations/ Political
1995	AEOI centrifuge research is moved from the AEOI to the Kalaye electric plant	Dual Use/Nuclear Research	Dual Use/Nuclear Research/ Political
1995	Vyacheslav Danilenko, a member of the gas dynamics research group at Chelyabinsk-70, a Russian nuclear weapons laboratory, approached the Iranian embassy in Ukraine with the offer to assist Tehran with the production of ultra-dispersed diamonds (UDD or nanodiamonds). Danilenko is invited to work with Shahmoradi at Sharif in 1996	Dual Use/Nuclear Research/Nuclear Weapons	Dual Use/Supplier Dynamics /Nuclear Weapons
1996	Iran received drawing for the P2 centrifuge	Dual Use/Nuclear Research	Dual Use/Nuclear Research/

			Supplier Dynamics
1997	Gholamreza Aghazadeh replaced Amrollahi as AEOI director.	Nuclear Energy/Nuclear Research	Political
1997	Aghazadeh made the decision to begin the construction a 40 MW heavy water RBMK style reactor.	Dual Use/Nuclear Research/Nuclear Energy	Nuclear Energy/Supplier Relations/ Political
1998	The AEOI asks Amir Kabir, an Iranian University, to continue with theoretical and experimental studies to develop centrifuges	Dual Use/Nuclear Research	Dual Use/Nuclear Research
1998	Iran makes a decision to build a large scale enrichment plant	Dual Use/Nuclear Research/Nuclear Energy	Dual Use/Nuclear Research/ Political
1999	Iran begins UF6 tests with centrifuges at Kalaye	Dual Use/Nuclear Research	Dual Use/Nuclear Research
1999	Iran accelerates its centrifuge research	Dual Use/Nuclear Research/Nuclear Energy	Dual Use/Political
1999	Iran's alleged weaponization work is consolidated; dubbed AMAD plan and placed under the leadership of Mohsen Fakhrizadeh (Mahabadi)	Dual Use/ Nuclear Weapons	Nuclear Weapons/ Successful Centrifuge Test
1999	Iran begins work at Gchine - a uranium mine separate from the declared work at Sagahand.	Dual Use/Nuclear Weapons	Second Fuel Cycle/Nuclear Weapons/ Dual Use
1999	Kimia Maadan, which allegedly acted as a front for both the AMAD Plan and the AEOI, was contracted to begin work at Gchine	Dual Use/Nuclear Weapons	Second Fuel Cycle/Nuclear Weapons/ Dual Use
2002	AEOI sends P2 design to a private Iranian company for mass production	Dual Use	Dual Use
2002/2003	Work on Project 111 - the purported effort to design the triconic warhead variant's payload chamber to accommodate the R265 shock wave initiator - is alleged to have begun	Dual Use/Nuclear Weapons	Nuclear Weapons
2002	AMAD plan reportedly tests the R265 shock generator system - a multipoint unlensed system that uses a castable explosive mixture of TNT and RDX to generate a uniform shock wave to compress the fissile core	Nuclear Weapons	Nuclear Weapons
2003	Iran razes the Lavizan Shian site	Nuclear Weapons	Detection/ Security Related

2003	Rouhani consolidates the nuclear "file"; the weapons program is halted; Iran suspends enrichment and conversion work	Dual Use/Nuclear Research/Nuclear Weapons	Detection/ Security Related
2005	Iran resumes conversion/civilian focused enrichment	Dual Use/Nuclear Research/Nuclear Weapons	Domestic Politics
2013	Iran resumes negotiations with the international community	Nuclear Energy/Nuclear Research	Domestic Politics

Conclusion

As more information becomes available and scholars gain access to new tools to analyze nuclear programs, nonproliferation and Middle East experts will be in a better position to determine the dynamics of proliferation. In doing so, future research can add to the two case studies discussed in this dissertation and, perhaps, improve upon its initial findings. This study suggested that nuclear decision-making is multi-causal, owing to the key decision-makers' differing interpretation of inputs. As such, states respond differently to similar inputs, and therefore the dominant theories on nuclear decision-making fail to capture the dynamics of proliferation in different countries.

However, confidence in this assertion can only come with more research. The most important course of action is to document nuclear decision-making in states that did not proliferate, compared to states that have explored developing nuclear weapons. The fact remains that most leaders don't pursue nuclear weapons. What explains their restraint? And how does that compare to leaders who did choose to proliferate?

This study also suggests that leaders are not necessarily pre-disposed to "want the bomb," and instead may "learn to love the bomb" when exposed to a certain trigger. However, this trigger is dependent on the perception of key-decision makers. This finding raises interesting questions: Why do some leaders "learn to love the bomb?" Similarly, why do some leaders "love the bomb," only to determine at a later date to discontinue a long established nuclear weapons program?

Sweden, Switzerland, Germany, and Italy, for example, all pursued nuclear weapons, only to abandon the program after making progress. Syria and Israel, neighbors in the Middle East, also launched nuclear weapons program; with Jerusalem successfully

developing and deploying a nuclear weapon in as early as 1967. By contrast, two other regional states, Oman and Jordan, have never pursued nuclear weapons, with Muscat adopting a non-interventionist foreign policy premised on non-alliance and mediation. Omani foreign policy in general differs considerably from that Saudi Arabia, which has long been suspected of keeping its nuclear options open owing to concerns about Iran. Furthermore, Saudi Arabia also helped to fund two other nuclear programs in Iraq and Pakistan, further suggesting that not all proliferators are created equal and threat perceptions are individualistic.

These differences in decision-making warrant more scrutiny to determine the drivers of nuclear decision-making in different countries. Why, for example, do certain states proliferate and/or pursue nuclear weapons, whereas others have embraced nonproliferation? To address these questions, scholars benefit from more rigorous analyses detailing the reasons why similar states, in different regions through out the world, have made different nuclear decisions. The focus on these dynamics will, in total, help scholars to develop a more rigorous theoretical framework designed to measure how states respond to similar inputs. This data, in turn, can then be used to make a determination about the drivers of nuclear decision-making in numerous different countries.

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